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COPING IN TEAM SPORTS VERSUS INDIVIDUAL SPORTS

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Abstract. Coping is the active process through which an individual faces a stressful life situation and manages to master it. The purpose of this paper is to assess the athletes’ ability to cope with stress and to reveal whether there are significant differences between individual and team sports. To achieve this purpose, it was used the Athletic Coping Skills Inventory (ACSI), with 28 items measuring the athletes’ psychological skills, such as: coping with adversity; coachability; concentration; confidence and achievement motivation; goal setting and mental preparation; peaking under pressure; freedom from worry. The scores obtained for each subscale range between the lowest, 0, and the highest, 12. The study was conducted on a total of 73 athletes with a mean age of 22.04 years (+/-2.2) and a sports experience of 10 years (+/-4.08) on average. Of the 73 athletes, 49% reported that they had practiced or were still practicing individual sports, and 51%, team sports. Results have shown that the average scores for the seven subscales are higher in athletes practicing individual sports compared to those involved in team sports. This finding demonstrates that individual sports athletes can cope much better with competitive stress. We consider that these results prove and support the fact that they are able to assess objectively and realistically their own psychological skills, as well as to establish their own motivational system, unlike the athletes who practice team sports.

Keywords: coping; psychological skills; motivation; individual sports; team sports.

Introduction

The term “stress”, as many other words, antedates its systematic or scientific use. In the 14th century, it was used to mean “narrowness, oppression”, and later, in the 17th century, to denote “hardship, straits, adversity or affliction” (Shorter Oxford Dictionary, 2007). In the 18th and 19th centuries, its meaning broadened to indicate “strain, pressure or strong effort”, which was intended to include terms describing the laws of physics, in addition to a person or a person’s organs and mental powers (Hinkle, 1973). In physics, stress was used to refer to an object’s resistance to external pressure, a model adopted by the social sciences (Thomas & Hersen, 2002: 56). In more recent times, stress has been associated with disease, with the disturbance of normal physiological and psychological functioning of an individual (Shorter Oxford Dictionary, 2007). Therefore, stress may be either physiological or psychological, or both, but, just as a bridge is structurally capable of adjusting to certain stresses, the human body and mind are normally able to adapt to new stressful situations. However, this ability to cope with stress has clear limits, and exceeding them through continued, prolonged nervous tension may cause a breakdown (Miller, Keane, & O’Toole, 2005).

Coping refers to the behaviour which protects people from being psychologically harmed by problematic social experience, which significantly mediates the impact that societies have on their members. The protective function of coping behaviour can be exercised in three ways: by eliminating or modifying conditions that give rise to problems; by perceptually controlling the meaning of experience in a way that neutralizes its problematic character; by keeping the emotional consequences of problems within manageable bounds (Pearlin & Schooler, 1978).

Weiten and Lloyd (2008: 603) identified the following three broad types of coping strategies: appraisal-focused, problem-focused and emotion-focused ones:

•Appraisal-focused coping is directed towards challenging one’s own assumptions; it can be adaptive but cognitive-based. Appraisal includes an initial evaluation process, when the person decides whether an event is threatening or challenging, and a secondary phase, when the person considers the coping options and resources available, and appraisal reaches the conscious level, involving an effort to manage better the situation (Lazarus & Folkman, 1984). This strategy occurs when the individual modifies the way of thinking, for example employing denial or distancing oneself from the problem. People may alter the way they think about a problem by changing their goals and values, such as by seeing the humour in a situation: some have suggested that humour may play a greater role as a stress moderator among women than men (Worell, 2001: 603).

•Problem-focused coping is directed towards reducing or eliminating a stressor; it can be adaptive but behaviour-based. People using this strategy try to deal with the cause of their problem and they do this by finding out information on the problem and learning new skills to manage it. Problem-focused coping is aimed at changing or
removing the source of stress. The three problem-focused coping strategies are: taking control, information seeking, evaluating the pros and cons (Lazarus & Folkman, 1984).

- Emotion-focused coping is directed towards changing one’s own emotional reaction. This strategy involves releasing suppressed emotions, managing hostile feelings through systematic relaxation procedures etc. Emotion-focused coping is “oriented towards managing the emotions that accompany the perception of stress” (Brannon & Feist, 2009: 121). In other words, this is an attempt to reduce negative emotional feelings associated with stressors like embarrassment or fear, and the corresponding strategies include: meditation, talking, denial, ignoring, distraction, physical exercise (Lazarus & Folkman, 1984).

Commonly, people use a mixture of the three types of strategies, and it is also worth noting that coping skills generally change over time. All these methods are useful, but some authors claim that problem-focused coping strategies would adjust better to life (Taylor, 2006: 193). There is also prioritization of emotion-focused coping, based on the idea that positive emotions help people sustain coping behaviours, get them away from distress and restore their coping energy, which leads them to reappraise the event and the meaning they derive from unfavourable outcomes (Britton, 2009). This “meaning-focused coping” is, in its essence, appraisal-based coping, in which the person draws on his/her beliefs, values and existential goals to motivate and sustain coping and well-being during a difficult time (Folkman, 2008).

However, coping research has progressed from this rather simplistic view to the commonly accepted transactional model, where coping is represented as a multidimensional, complex process influenced by situation, experience and individual difference, recognising the presence of avoidance coping strategies (Krohne, 1993; Lazarus, 1999; Nicholls & Polman, 2007). Stress research has proven, in its turn, that although stress is mostly regarded as something bad or unwanted, as a negative experience for the individual (who describes it as “feeling anxious”, “feeling depressed”, or having headaches, even panic attacks), it is not simply “what happens to people”, but an interactive, dynamic process, in which time plays a crucial role (Weinberg, Sutherland, & Cooper, 2010).

Studies have revealed that there are various stress coping techniques, such as positive techniques (adaptive or constructive coping), which integrate the temporal aspects of coping, especially coping that anticipates future events, the other two being social coping (seeking social support from others) and meaning-focused coping (deriving meaning from the stressful experience) (Brannon & Feist, 2009: 122). The theory of proactive coping also includes self-regulated goal attainment strategies and the concept of personal growth (Schwarzer & Knoll, 2002). One of the most positive methods used to cope with painful situations is humour: people feel things to the full but master them by turning it all into pleasure and fun (Skinnyner & Cleese, 1994: 55). Physical exercise and relaxation techniques, such as progressive muscle relaxation, equally contribute to stress management (Madders, 1981). While positive techniques of coping with stress improve functional capacities, negative techniques (maladaptive coping or non-coping) reduce symptoms but maintain or even worsen the disorders, being more efficient in the short term rather than in the long term. Strategies that can be used to avoid maladaptive behaviour are dissociation, sensitization, safety behaviours, anxious avoidance and escape (Wikipedia, 2015).

Concerning the coping strategies used in sports, athletes who possess and prove well-developed coping skills are able to manage much more efficiently both the stress and demands of training and competition. In this regard, Cox (2007) has revealed the following coping strategies that are used by elite athletes:

- Olympic wrestlers and skaters: thought control strategies (self-talk, positive thinking, thought control); attentional focus strategies (concentration control, tunnel vision); emotional control strategies (arousal control, relaxation, visualization); behavioural strategies (set routines, rest, control of the environment);
- decathlon athletes: visualization, focus on relevant cues, competing against self, confidence in training, consistency of effort, camaraderie;
- soccer and golf players: application of learned mental skills, social support resources, practice and performance preparation, blocking out relevant and irrelevant stimuli;
- skilled and moderately skilled golfers: cognitive adjustment techniques (problem-focused), relaxation techniques (emotion-focused), off-course efforts to improve golf ability (problem-focused), situation golf course strategies (problem-focused), general emotion-focused strategies.
It can be seen that sport involvement requires both physical and mental capabilities of individuals in order to overcome the pressure before, during and after each training and competition (Omar-Fauzee, 2014: 332).

The purpose of this paper is to highlight differences between the athletes who practice individual sports and those practicing team sports, in terms of their strategies to cope with stress.

Materials and methods

Participants in the study. The study was conducted on a total of 73 athletes (27 female and 46 male), with a mean age of 22.04 years (+/-2.2) and a sports experience of 10 years (+/-4.08) on average. Of the 73 participating athletes, 36 (49%) reported that they had practiced or were still practicing individual sports, and 37 (51%), team sports. We mention that, among the 37% team sports athletes, 53% practiced football, 22% handball, 13% volleyball, 9% basketball, and 3% rugby. Also, among the 49% individual sports athletes, 18% practiced athletics, 15% dancesport and judo respectively, 13% tennis, 10% artistic gymnastics, 8% karate, taekwondo and kempo respectively, 3% powerlifting, and only 2% fencing.

Athletic Coping Skills Inventory (ACSI). To assess the ability to cope with stress, it was used the Athletic Coping Skills Inventory (ACSI), developed by Smith et al. (1995). The questionnaire measures 7 subscales of psychological coping skills for athletes, namely:

- **Coping with Adversity**: This subscale assesses if an athlete remains positive and enthusiastic even when things are going wrong, remains calm and controlled, and can quickly bounce back from mistakes and setbacks.
- **Coachability**: It assesses if an athlete is open to instruction and learns from it, and accepts constructive criticism without taking it personally and becoming upset.
- **Concentration**: This subscale reflects if an athlete becomes easily distracted and is able to focus on the task to achieve in both training and game situations, even when adverse or unexpected situations occur.
- **Confidence and Achievement Motivation**: It measures if an athlete is confident and positively motivated, consistently gives 100% during training and competition, and works hard to improve personal skills.
- **Goal Setting and Mental Preparation**: This scale assesses if an athlete sets and works for achieving specific performance objectives, plans and mentally prepares for competitions, and has a clear game plan for performing well.
- **Peaking under Pressure**: It measures if an athlete is challenged rather than threatened by pressure situations and performs well under pressure.
- **Freedom from Worry**: This subscale assesses if an athlete puts pressure on himself or herself worrying about performing poorly or making mistakes, and worries about what others will think if he/she performs poorly.

Scores range from a low of 0 to a high of 12 on each subscale, with higher scores indicating greater strengths on that subscale. The score for the total scale ranges from a low of 0 to a high of 84, with higher scores signifying greater strength.

Statistical analysis. The statistical data processing was performed using SPSS for psychology, version 19. First of all, the data screening and descriptive statistic were achieved, in order to analyse the characteristics of participants. In the next stage, it was achieved the level of Pearson’s correlation between the 7 subscales, in order to predict the power and direction of the relationships between variables. To assess the statistical difference between the means obtained by the groups of individual and teams sports athletes, it was used the t-test for independent samples.
Results

Table 1. Descriptive statistic for ACSI variables

<table>
<thead>
<tr>
<th>ACSI subscales</th>
<th>Sports</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coping with Adversity</td>
<td>Individual</td>
<td>6.86</td>
<td>2.573</td>
<td>.423</td>
</tr>
<tr>
<td></td>
<td>Team</td>
<td>6.50</td>
<td>2.833</td>
<td>.472</td>
</tr>
<tr>
<td>Coachability</td>
<td>Individual</td>
<td>8.43</td>
<td>2.489</td>
<td>.409</td>
</tr>
<tr>
<td></td>
<td>Team</td>
<td>8.11</td>
<td>2.836</td>
<td>.473</td>
</tr>
<tr>
<td>Concentration</td>
<td>Individual</td>
<td>8.30</td>
<td>1.777</td>
<td>.292</td>
</tr>
<tr>
<td></td>
<td>Team</td>
<td>8.03</td>
<td>2.360</td>
<td>.393</td>
</tr>
<tr>
<td>Confidence and Achievement</td>
<td>Individual</td>
<td>8.78</td>
<td>1.750</td>
<td>.288</td>
</tr>
<tr>
<td></td>
<td>Team</td>
<td>8.39</td>
<td>2.522</td>
<td>.420</td>
</tr>
<tr>
<td>Goal Setting and Mental Preparation</td>
<td>Individual</td>
<td>7.95</td>
<td>2.013</td>
<td>.331</td>
</tr>
<tr>
<td></td>
<td>Team</td>
<td>7.22</td>
<td>2.307</td>
<td>.384</td>
</tr>
<tr>
<td>Peaking under Pressure</td>
<td>Individual</td>
<td>6.51</td>
<td>3.042</td>
<td>.500</td>
</tr>
<tr>
<td></td>
<td>Team</td>
<td>6.28</td>
<td>3.844</td>
<td>.641</td>
</tr>
<tr>
<td>Freedom from Worry</td>
<td>Individual</td>
<td>6.30</td>
<td>2.644</td>
<td>.435</td>
</tr>
<tr>
<td></td>
<td>Team</td>
<td>6.75</td>
<td>3.148</td>
<td>.525</td>
</tr>
</tbody>
</table>

Note: a Correlation is significant at the 0.01 level (2-tailed). b Correlation is significant at the 0.05 level (2-tailed), c Correlation is insignificant

Table 2. Correlation matrix for the 7 ACSI subscales

<table>
<thead>
<tr>
<th></th>
<th>Coping with Adversity</th>
<th>Coachability</th>
<th>Concentration</th>
<th>Confidence and Achievement</th>
<th>Motivation</th>
<th>Goal Setting and Mental Preparation</th>
<th>Peaking under Pressure</th>
<th>Freedom from Worry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coping with Adversity</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coachability</td>
<td>.1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concentration</td>
<td>.5</td>
<td>.3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confidence and Achievement</td>
<td>.4</td>
<td>.312a</td>
<td>.77a</td>
<td>.329a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td>.97a</td>
<td>.312a</td>
<td>.396a</td>
<td>.360a</td>
<td>.49</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal Setting and Mental Preparation</td>
<td>.4</td>
<td>.183a</td>
<td>.451a</td>
<td>.387a</td>
<td>.52</td>
<td>.36a</td>
<td>.52</td>
<td></td>
</tr>
<tr>
<td>Peaking under Pressure</td>
<td>.5</td>
<td>.4</td>
<td>.140a</td>
<td>.187a</td>
<td>.00</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freedom from Worry</td>
<td>05a</td>
<td>.5</td>
<td>.316a</td>
<td>.291a</td>
<td>.45</td>
<td>.22a</td>
<td>.388a</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: a Correlation is significant at the 0.01 level (2-tailed). b Correlation is significant at the 0.05 level (2-tailed), c Correlation is insignificant

Table 3. Independent Samples Test

<table>
<thead>
<tr>
<th></th>
<th>Sig.</th>
<th>Mean</th>
<th>Difference</th>
<th>Std. Error</th>
<th>95% Confidence Interval of</th>
<th>t</th>
<th>df</th>
<th>(2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above table shows the results of the independent samples t-test for equality of means.
Discussions and conclusions

Previous research in the sports field was conducted to examine the usefulness of ACSI in predicting batting average, earned run average and number of errors committed for collegiate baseball players (Kimbrough, DeBolt, & Balkin, 2007).

In our study, the Athletic Coping Skills Inventory was used to highlight differences in the skills of coping with stress between individual and team sports. Thus, in Table 1, it can be noted that the average obtained in individual sports is higher for 6 of the 7 subscales of ACSI questionnaire. Regarding the variable freedom for worry, the average score is higher in team sports compared to individual sports. Table 2 reveals that the concentration variable correlates significantly (at the 0.01 level, 2-tailed) with the variables coping with adversity (p = 0.584) and coachability (p = 0.312). Also, the variable confidence and achievement motivation correlates significantly with three variables, namely: coping with adversity (p = 0.477), coachability (p = 0.396) and concentration (p = 0.607). Goal setting and mental preparation correlates significantly (at the 0.01 level, 2-tailed) with the variables coping with adversity (p = 0.340), concentration (p = 0.451) and confidence and achievement motivation (p = 0.492). According to the correlation matrix, it can be noted an insignificant correlation between goal setting and mental preparation and coachability (p = 0.183). As regards the variable peaking under pressure, it correlates significantly with the variables coping with adversity, concentration, confidence and achievement motivation and goal setting and mental preparation, at the significance level 0.01 (2-tailed), and insignificantly with the variable coachability (p = 0.140). Freedom from worry correlates significantly (at the 0.01 level, 2-tailed) with coping with adversity, coachability (p = 0.505), confidence and achievement motivation (p = 0.316), peaking under pressure (p = 0.388) and concentration (at the 0.05 level, 2-tailed).

Through the t-test for independent samples, we have checked whether there are statistically significant differences between the groups of individual and team sports athletes (Table 3). In order to check the statistical significance between groups, there were fulfilled the conditions required by the application of t-test: independence of groups – each subject was part of a single group, and groups were independent; dependent variables (ACSI subscales) were quantitative; dependent variables were normally distributed. Following the t-test analysis, Levene’s test for equality of means has revealed that, in the 7 subscales, variances are equal, because the values higher than 0.05 are not statistically significant. Therefore, we have made reference to Equal variances assumed (Table 3).

Analysis of the results obtained in this study highlights that the average score for the coping variable (M = 6.86, +/- .573) is higher in individual sports (t = .576, df = 71, bidirectional p = 0.566) than the average score achieved by team sports athletes (M = 6.50, +/-2.833). The 95% confidence interval for this difference varies from -0.898 to 1.627. We believe that this difference reveals a better ability of individual sports athletes to remain positive and enthusiastic even in stressful situations. This finding proves that they have developed better coping mechanisms to bounce back more quickly after mistakes or setbacks, in both training and competition.
For the coachability variable, the average score (M = 8.43, +/-2.489) is significantly higher in individual sports (t = .576, df = 71, p = .566) than the average score obtained in team sports (M = 8.11, +/-2.836), and the 95% confidence interval for this difference varies from -.923 to 1.566. In our opinion, the difference between means is due to the fact that individual sports athletes are much more open to instruction and accept constructive criticism without taking it personally and becoming upset, are more grateful when someone cares about them and leads them to improve at what they do. Average scores also emphasize that, in individual sports, athletes are vulnerable enough to accept that they are not perfect, being open to feedback, even if it hurts, and are more willing to actively change their bad habits and skills. At the opposite end, uncoachable athletes show certain key behaviours. It does not take long for a coach to spot an uncoachable player, and very rarely can a coach make a player coachable (Wilson, 2014).

Regarding concentration, which is simply defined as “the ability to perform with a clear and present focus” (Vernacchia, 2003: 144), the study results demonstrate that individual sports athletes have a better ability to focus compared to team sports athletes. The average score for the concentration variable (M = 8.30, +/-1.777) is significantly higher (t = .552, df = 71, p = .583) than the average score achieved in team sports (M = 8.03, +/-2.360). We can say that the difference between means (.270) for the concentration variable is due to a better ability to focus on the work tasks, in both training and competition, acquired by individual sports athletes, as well as to a better ability to cope with destructive factors, both with the internal (such as physical and mental fatigue, anxiety, ego defence reactions supported by the desire for self-assertion and victory, emotional exhaustion or negative self-talk) and external ones (visual or auditory, such as the opponents during competitions, spectators or media) (American Psychological Association, 2014). The 95% confidence interval for this difference varies from -.704 to 1.243.

Previous research (Sari et al., 2015) has emphasized that self-confidence is positively and significantly correlating with intrinsic motivation to know and to accomplish things, intrinsic motivation to experience stimulation, external regulation, identification, introjection, intrinsic motivation and extrinsic motivation (p< 0.05); self-confidence appears to be negatively and significantly correlating with a-motivation (p< 0.05). The results of this study prove that, also for the variable confidence and achievement motivation, the average score is higher in individual sports (M = 8.78, +/-1.750) compared to team sports (M = 8.39, +/-2.522). The difference between means, of .395, for the two groups of athletes, is due to a stronger motivational system acquired by the practitioners of individual sports. They have a well-defined motivational system, are more confident and more positively motivated than those in team sports, and also make greater efforts to improve their psychological skills. In individual sports, competition requires an optimal motivation level, which demonstrates that these athletes are better prepared psychologically to cope with the competitive system, and not only. The 95% confidence interval for this difference varies from -.616 to 1.406.

Goal setting is one of the most important skills taught to athletes in order to help them achieve optimal performance. The goal-setting process helps athletes understand where they are currently and also where they want to go. A mental skills training consultant or sport psychologist can teach an athlete how to set systematic goals that are focused on the process and performance rather than focused on the outcome of competition (Kornspan, 2009). The study results prove once again that, in individual sports, athletes have better mental preparation. Thus, the average score for goal setting and mental preparation is higher (M = 7.95, +/-2.013) than the average score in team sports (M = 7.22, +/-2.307). But related to the maximum score (12 points) that might be obtained for each subscale, the mean indicates that, in both individual and team sports, this variable can be substantially improved. Data analysis shows that the surveyed athletes have not benefited from the appropriate mental preparation needed to build those psychological skills enabling them to cope with difficult, stressing, unusual situations. This finding is also supported by the average scores obtained for the variables peaking under pressure and freedom from worry. Although the average score for the variable peaking under pressure (M = 6.51, +/-3.042) is higher than in team sports (M = 6.28, +/-3.844), the results are insignificant. This proves that the athletes participating in the study do not possess strategies to cope with pressure situations, since they have not been able to achieve good performance under pressure. The same is noticed for the variable freedom from worry, in both individual and team sports. Average scores indicate that athletes are worried about performing poorly or making mistakes, put pressure on themselves and are worried about what others will think if they perform poorly.

In conclusion, we can state that individual sports athletes can better develop skills to cope with stressful situations compared to those practicing team sports. In individual sports, athletes make much more attempts to cope with “tensions” caused by critical events, in both training and competition; they resist stressful situations by altering relationships with the environment through better coping strategies, such as preparation to prevent stressful situations,
remaining enthusiastic even when things are going wrong, or keeping their ability to focus on tasks even in adverse situations.

Finally, it should be added that, whether individual or team sports athletes, they all have different sources of stress, and consequently each athlete deserves specific strategies to cope successfully in their selective sports (Kristiansen, Roberts, & Abrahamsen, 2007). This is strengthened by the fact that successful athletes have reported they intentionally practice such strategies to achieve peak performances (Jones, 2011: 1), which obviously suggests that athletes must learn and train coping strategies to be able to face the realities of highly competitive sports situations.

Acknowledgement

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References


CONSIDERATIONS ABOUT EQUAL OPPORTUNITIES IN SPORT

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Abstract. The various forms of practicing physical exercises reveal the radial trend of tasks according to the objectives of each subsystem of sport (sport for all, adapted sport and performance sport), which finally converge towards optimizing the development of human personality and optimizing/maximizing the individual bio-psycho-motor and social potential under different conditions. However, any development involves quantitative and qualitative aspects, which place the human individual in a permanent competition with oneself, with the environment or with others. The principle of equal opportunities is transposed to sport with a particular significance, depending on the particularities of each subsystem (sport for all, adapted sport and performance sport), because there are important differences between them, from the standpoint of their objectives and ways of organizing the activity.

Keywords: equal opportunities, subsystems of sport, cooperation.

Introduction

In a world facing every day increasingly growing political confusions and socio-economic changes, various religions and multiple cultures, the sport is the universal language perceived by the entire humanity. Whether it is a game or a high level competition, whether there are figures expressed in rankings, whether it is natural or uses different materials or facilities, the sport manages eventually to go beyond all ideologies (Dragnea et al., 2000) and to ensure equal opportunities, as a fundamental human right to fully participate in the economic and social life, regardless of ethnic origin, gender, religion, age, disability or sexual orientation.

In Romania, “the practice of physical education and sport is an individual right, without discrimination, guaranteed by the State, and the administrative authorities, educational institutions and sports institutions have the obligation to support physical education, sport for all and performance sport, to provide the conditions for practicing them” (Legea Educației Fizice și Sportului, 2000).

Topic addressed

The principle of equal opportunities is transposed to sport with a particular significance, depending on the particularities of each subsystem (sport for all, adapted sport and performance sport), because there are important differences between them, from the standpoint of their objectives and ways of organizing the activity.

In the current conditions of social development, sport for all has grown in a multifaceted reality, in terms of motor activity and motivation, form of organization and particularities of the subjects. The quantity and quality of sport offer in recent years has led to an impressive increase in the number of practitioners, given that “doing sport” tends to become a valuable lifestyle and a way of social assertion.

Most times, the sport for all does not have a competitive character, being practiced both in sports clubs and in unorganized forms, within a variety of motor activities that make it accessible to all members of society, regardless of age, gender, motor skills, social status etc.

Among the objectives promoted by the sport for all, we find: gaining a healthy lifestyle, optimization of physical development, social integration by building moral values in the sport spirit of the discipline and observance of the rules, development of individual and group capacity for action, respect for self and others, including here the minority groups (people less endowed from the motor point of view, cultural, religious and other differences), building the spirit of tolerance and social responsibility (Dragnea et al., 2002).

In these circumstances, competitions are often planned in the leisure sport, as motivating and stimulating events intended for a wide category of participants. Comparing one’s sport performance with the opponent’s, achieving performance as a result of direct confrontation with the competitive partners and winning the victory become thus secondary factors. The objective is the active participation of a number of practitioners as large as possible.
Consequently, sports competition involves new objectives that correspond to the needs of people who practice sport. Such objectives, considered as mandatory, are represented, for instance, by the social contacts through sports competition, the common practice of sport, the fight against phenomena related to insufficient movement, overcoming mental problems or exceeding some concrete limits of the body. The necessity to organize sports competitions derives from dominant reasons, such as the joy of being surrounded by nature, the trend towards collective sports movement, the need to have a beautiful body, the need to have a stable state of health and the desire to communicate.

**Adapted sport** reunites competitive and non-competitive activities based on motor structures, specific regulations, material and organizational conditions which meet the requirements of different types of physical, motor or mental disabilities (Teodorescu & Bota, 2007).

Within this subsystem, we highlight the existence of sports activities that do not differ in structure, rules, material and organizational conditions from popular sports branches and events; sports activities that keep the usual structure and rules, but benefit from material conditions compensating to a certain extent for the competitor’s disability; sports activities in which participants are competitors with disabilities and competitors without disabilities, mentioning that disabled athletes have a number of facilities; sports activities in which participants are competitors with and without disabilities, all of them benefiting from a modified version of that event, and also segregated sports activities, in which participants are exclusively subjects with the same type and degree of disability. As regards performance adapted sport, the classification criteria for participation in competitions aim to provide equal opportunities, therefore they are established according to the nature and severity of the disability, the functional abilities to execute skills specific to different sports and the previous performances of the athlete, so that the sports result depends only on the state of training, the skill level, the fitness level, on the talent and motivation of the participant etc.

**Performance sport** is the activity of maximizing performance capacity and highlighting it in major competitions, which is materialized in records and titles, medals and places in the official rankings.

Competitions are based on rules, which establish, among others, regulations on the distribution of athletes by age, gender and performance category, the conditions of participation, the financial rights of participants, the costs involved, as well as on the rating method and how competitions take place. Performance in the world of sports does not aim to destroy the other, but implies the existence of communication relationships between the opponents, in the spirit of fair play. Sports competition involves emulation, combativeness, rivalry, conflict and, last but not least, cooperation; it always ends with a ranking and with prize awarding to the best participants, but it can also be focused on aspects related to aid, support, collaboration.

According to Epuran (2013), the defining notes of sports competition are:

- it is a physical activity;
- it has an emulative character and a defined goal (for merit, victory, reward);
- it is institutionalized and organized;
- it has general and specific rules, based on the observance of sport spirit;
- it provides equal opportunities.

The principle of equal opportunities is applied through rules that are valid for all participants. However, this principle is compromised in a competition when the particular advantages enjoyed by some participants cannot be compensated (better conditions for preparation, knowledge of the venue, differences in constitution, age, gender) or when the referees admit divergent interpretations of the rules (Culeva & Pătru, 2000).

Sports regulations observe two principles: the uniform development of competitions, in terms of their organization, standards, material and environmental conditions; providing equal opportunities for all participants, which refers to both the conditions of performing motor acts or sport-specific actions, a situation in which we speak about normative rules - establishing what is compulsory to do, prescriptive rules - indicating what should be done, and restrictive rules - indicating what is allowed to do, all this with regard to the conditions of organizing competitions, awarding points and validating results according to numerical and/or qualitative criteria, on the one hand, and those relating to the general behavior of athletes - attitude towards partners, referees, officials, spectators, on the other hand (Epuran, Holdevici, & Tonața, 2001).
The general regulations of each sport try to ensure equal conditions for all competitors, but this is not possible. For instance, drawing the lanes in swimming, rowing and kayak/canoe events, the successive evolution of athletes in alpine skiing events etc. leave their mark on the achievement of performance, because athletes perform in different conditions, which cancel a part of the equal rights that should exist.

Under these circumstances, it is interpretable the fact that, in each case, the comparison of performances should represent the essence of sports competitions, because these ones can pursue other goals, too. There are situations where issues such as social elements, common ascertaining of performance capacity, establishing contacts and meetings etc. are brought to the forefront. In this case, the opponents do not consider the competitive factor as being dominant and the competitive activity as being essential; an example is represented by leisure sports activities.

Sports competition is the expression of a special cultural ethic with clearly delimited territories, precise borders and distinct spatial objectives, equal opportunities, fair competition, referees who guarantee the accepted rules, stable benchmarks that do not allow any confusion.

However, the real equality of opportunity is, as everywhere in the world, rather estimated than accessible, because practical reality is often dissimulated, being presented the open formal ways of public sports instruction, as well as those really accessible for all. The number of athletes coming from various social categories, who reach different levels of performance, is not proportional with the number of people in these categories of origin; we refer here to children and young people from rural areas compared to those living in urban areas, to children and young people from urban areas with a different social status in terms of family revenue etc. This always occurs where a sports instruction process is carried out, even in those societies where instruction services are free for all levels.

The causes generating such a phenomenon are multiple: one of the structural conditions that make possible the emergence of unequal opportunities in the practice of performance sport is its pyramidal character. Regardless of its concrete form of organization and the complex network of schools, clubs and sports associations, the access to a higher level of classification involves the completion of value steps, the number of athletes becoming increasingly smaller as we approach top performance, on the one hand because of the skill level and on the other hand because of the insufficient financial support either for participation in competitions or for preparation, or both. This natural feature is achieved based on a complex selection mechanism through which some young people are kept in the competition system and others are eliminated. Apparently, this mechanism is strictly performance-related, meaning that all the formal criteria of transition from one level to another are based on the performance capacity developed and assessed as objectively as possible. Although it might seem that what matters are exclusively the merits of the athlete, in reality, the selection is most often social, which can be easily demonstrated.

The need for performance and success, power, does not characterize only the sports activity, but also the human activity, in general.

In other words, the society in which we live is characterized by competitiveness, which leads to obtaining increasingly better results, provided that the economic, political and social rules are respected.

In sports, the personal or team’s value is established through competition, whose regulations are set by specialized authorities, and it is expressed by the place in the rankings.

Individuals compete because the sports activity itself requires this, but competition can be seen as both a relation of opposition, in the fight for victory, and an agreement between competitors who have a common goal.

In establishing the cooperation and/or opposition relationship, the starting premise is that each individual sets a series of objectives whose solution cumulates positive and/or negative situations, which, at a given moment, may generate a form of conflict resulting from various intra- and interpersonal issues existing within the group and between groups.

Cooperation requires the presence of the motivation of belonging, acceptance and security, the group members pursuing a common goal and organizing their actions so as to surpass the opposite group (Epuran, 2013).

“Within social cooperation, feelings of sympathy and friendship, as well as a feeling of common belonging may arise between the members of society. Such feelings are the source of the most wonderful and sublime human experiences. They are the most precious ornament of life; they raise the animal species represented by man to the height of a really human existence… However, they are not, as some used to believe, the factors that have produced social relationships. They are the fruits of social cooperation, which do not flourish but within it”. (von Mises, 2002)

According to Deutsch (2006), the cooperation relationships where the objectives of the parts are predominantly positive and interdependent generate:
• efficient communication: ideas are verbalized, and the group members are attentive to each other, accept other people’s ideas and have less difficulty in decoding the message;
• friendship, support and less obstruction in the discussions: the group members are satisfied with the solutions found; besides, they seek to improve themselves, to convince and gain the respect of others;
• coordination of efforts, distribution of tasks, orientation towards achieving the tasks, order in the discussions and high efficiency;
• a feeling of agreement with the ideas of others and also the confidence that one’s personal ideas will be taken into account by other group members, who will try to develop them;
• recognition and respect for the other, ability to be receptive to the other’s needs;
• desire to enhance the power of the other (for example, the other’s knowledge, abilities, resource etc.): the group members are valuable for the individual, but at the same time they benefit from individual abilities that increase their power;
• recognition of contradictory interests as a common problem that can be solved through collaboration, which facilitates the efforts to acknowledge the legitimacy of the other and the necessity to search for a solution that meets the needs of all. This tends to limit rather than to expand the scope of conflicting interests.

Conclusion

In conclusion, competitions are sports events organized in order to achieve comparisons between individuals, groups, teams or nations on the basis of formal rules established beforehand under the slogan of equal opportunities and equal rights, either for achieving the best results and winning the victory or for obtaining symbolic or material values, because usually only them can convince the competitors to participate in a challenge.

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References

THE RELATIONSHIP BETWEEN SOME SOMATIC PARTICULARITIES AND SPORTS PERFORMANCE IN TAEKWONDO

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Abstract. In TKD, as in most sports disciplines, there are preferred those young people belonging to the athletic mesomorph body type, but this is not defining with regard to sports performance in TKD, the best performers of this sports discipline having different somatic types. The research purpose is to investigate the relationship between some somatic particularities and sports performance in WTF TKD using the Dartfish Video Platform. For this research, matches were captured and processed using the Dartfish Video Software Solution. From the total number of 736 matches that took place at the 2015 Senior World Taekwondo Championships held in Chelyabinsk, Russia, we analyzed 30 matches. The criterion underpinning our analysis was the anthropometric one. Thus, there were analyzed only those matches where the difference in height between the two competitors was more than 15 cm, and the difference in their body weight was plus or minus 2-3 kilos. It is noted that, in attack, over 50% of short-statured athletes prefer technical kick actions (Bandal chagi) and over 20% of them use technical arm actions (Jireugi). Regarding the technical attack actions of tall athletes, it can be seen that over 50% use Bandal chagi, over 20% use technical side kick actions (Yeop chaogi) and 15% use technical actions. Both tall and short athletes prefer the attack, whether simple or multiple, as a way of scoring, the counterattack being more difficult because of the difference in height between the two fighters. We believe that using the Dartfish Video Platform is a remarkable option, due to both the multitude of data and the maximization of real-time viewing. In this context, we think that video analysis is one of the most advanced technologies that can be successfully used in sports preparation, as it helps maximize the training process.

Keywords: performance, biotype, Taekwondo (TKD).

Introduction

“Taekwondo is a universe. And those who really love it merge with it” (Dimciu, 2013: 5). Starting from this statement, we can see how each practitioner of this Olympic discipline should relate to the totality of aspects forming a particular lifestyle, given that this is a way for the human being to exist in interdependence with the principles of this Korean martial art and to fully understand the philosophy of Taekwondo. This unconditional love for a complexity of factors contained by Taekwondo must reach the level of personal identity with it, each practitioner becoming thus the embodiment of many centuries of continuous and uninterrupted development of one of the oldest existing fighting styles.

As regards the somatic particularities of TKD practitioners, the specialized literature describes three distinct constitutional biotypes, namely the ectomorph, endomorph and mesomorph ones; however, nobody belongs 100% to a concrete biotype, each of us possessing different generalities from the three biotypes, with predominant trends towards one biotype or another. The classification into the three somatic types is achieved according to some obvious criteria: muscle mass, height, fat tissue, bone thickness. (Bosjoc, 2015) Thus, the ectomorphs or the thin biotype are mainly represented by slim people, with narrow shoulders, a flat and long thoracic cavity, long and thin limbs, a thin subcutaneous fat layer and a delicate body constitution. This is the type of slim and tall people, with low muscle mass, thin bones and low fat tissue. They are characterized by reduced strength and endurance. In their physical training, these people are recommended to use basic exercises engaging several muscle groups, exercises with heavy weights and 8-12 repetitions at an increased intensity, with 2-3 minutes of break between series. The endomorphs or the naturally fat people have relatively short limbs, rounded shapes, a prominent thoracic cavity and easiness to store body fat or a fat layer in all body areas. In terms of body composition, this somatic type is characterized by large bones and joints, short limbs, rounded shapes, wide hips and waist. The athletes characterized by an endomorph structure should try to use exercises stimulating their metabolic process in order to stimulate fat burning, which involves combining a well-thought diet with aerobic cardio training (30-45 minutes a day, at an intensity of 75%), and this because cardio training is the most efficient method for their body constitution. 4-5 workouts per week are usually recommended, and in the case of extreme endomorphs, even daily workouts. The mesomorphs or the genetically athletic people have broad shoulders, a strong skeleton and a body with strong and harmonious muscles. They possess the highest potential for fitness and bodybuilding, they have well-developed muscles, broad shoulders, a narrow waist and a low fat layer. They are characterized by a very efficient metabolism, with the possibility to easily control their body weight and fat tissue. They can easily develop their muscle mass and strength, achieving results with almost any type of training.
In TKD, as in most sports disciplines, there are preferred those young people belonging to the athletic mesomorph body type, but this is not defining with regard to sports performance in TKD, the best performers of this sports discipline having different somatic types.

Relevant research on the debated topic at the national level

The topic is highlighted in the specialized national literature by a study about the “Correlative aspects between some personal somatic characteristics and sports performance”, conducted by Păunescu (2011) on the athletes participating in the 2008 Olympic Games of Beijing. It is to mention that this study was achieved on normal protections, because electronic protections were introduced into competitions in 2010. After this study, it has been found that male winners have a height around the average of their weight class, while in the case of female winners this value is above average.

Relevant research on the debated topic at the international level

At a global level, the interest in the profile of TKD athletes has got a scientific character after 2000, when TKD participated in the Olympics as an official sport. Thus, the study achieved by Kazemi et al. (2006), in Canada, identified the profile of both the Olympic champion and other participants, using data related to the anthropometric characteristics of the athletes, such as age, height, weight and body mass index, as well as technical data, such as scored points, penalties, lost points and defensive/offensive technical kicking and punching actions. According to the above-mentioned authors, there were no significant differences between winners and losers in terms of age, height, weight, or body mass index. However, both the male and female winners had a lower mean age and a relatively lower body mass index compared to other athletes (Table 1).

Table 1. Characteristics of the athletic profile (n = 102)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Males</th>
<th></th>
<th></th>
<th>Females</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Winners (n = 16)</td>
<td>Others (n = 38)</td>
<td></td>
<td>Winners (n = 16)</td>
<td>Others (n = 32)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>24.4 (3.3)</td>
<td>25.2 (4.3)</td>
<td></td>
<td>23.1 (3.9)</td>
<td>24.9 (4.7)</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>183 (.08)</td>
<td>179 (.08)</td>
<td></td>
<td>170 (.07)</td>
<td>169 (.08)</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>73.4 (12.1)</td>
<td>73.7 (14.3)</td>
<td></td>
<td>60.3 (9.1)</td>
<td>61.3 (10.9)</td>
<td></td>
</tr>
<tr>
<td>Body mass index (BMI)</td>
<td>21.9 (2.4)</td>
<td>22.8 (3.3)</td>
<td></td>
<td>20.8 (2.3)</td>
<td>21.3 (2.7)</td>
<td></td>
</tr>
</tbody>
</table>

According to the study results, unsuccessful male athletes use more often offensive strikes compared to successful athletes. In this situation, offensive strikes represented at least 52% of the techniques used (Table 2).

Table 2. Techniques used to score (n = 102)

<table>
<thead>
<tr>
<th>Techniques</th>
<th>Males</th>
<th></th>
<th></th>
<th>Females</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Winners % (n)</td>
<td>Others % (n)</td>
<td></td>
<td>Winners % (n)</td>
<td>Others % (n)</td>
<td></td>
</tr>
<tr>
<td>Offensive strikes</td>
<td>54% (147)</td>
<td>63% (128)</td>
<td></td>
<td>53% (170)</td>
<td>52% (103)</td>
<td></td>
</tr>
<tr>
<td>Defensive strikes</td>
<td>46% (126)</td>
<td>38% (78)</td>
<td></td>
<td>47% (149)</td>
<td>47% (93)</td>
<td></td>
</tr>
<tr>
<td>Punch strikes</td>
<td>0% (1)</td>
<td>0% (2)</td>
<td></td>
<td>0% (0)</td>
<td>0% (1)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100% (274)</td>
<td>101% (204)</td>
<td></td>
<td>100% (319)</td>
<td>100% (197)</td>
<td></td>
</tr>
</tbody>
</table>

The same authors emphasized that offensive techniques had been used more often by far than defensive techniques. However, successful male athletes had the highest percentage of offensive strikes (63%), as opposed to female athletes who used only 45 techniques (8%). Both successful and unsuccessful male athletes recorded, in the first round, a higher percentage, 43% and 65%, respectively. Successful female athletes scored only 19% of the total points in the
first round, as opposed to unsuccessful female athletes (59%), the winners scoring more than a half (53%) of the total points (Table 3).

Table 3. The score for each round

<table>
<thead>
<tr>
<th>Round</th>
<th>Males</th>
<th>Females</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Winners % (n)</td>
<td>Others % (n)</td>
<td>Winners % (n)</td>
<td>Others % (n)</td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; round</td>
<td>43% (72)</td>
<td>65% (91)</td>
<td>19% (34)</td>
<td>59% (83)</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; round</td>
<td>30% (51)</td>
<td>31% (43)</td>
<td>53% (94)</td>
<td>35% (50)</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; round</td>
<td>27% (45)</td>
<td>4% (5)</td>
<td>28% (50)</td>
<td>6% (8)</td>
</tr>
<tr>
<td>Total</td>
<td>100% (168)</td>
<td>100% (139)</td>
<td>100% (178)</td>
<td>100% (141)</td>
</tr>
</tbody>
</table>

The results of this study revealed that, in all weight classes, except for the over 80 kilos, the average weight of male winners was higher than the average of their weight class. In heavy weight classes, for both men and women, the average weight of winners was lower than the average of their class. These findings are best explained by calculating the body mass index (BMI). The mean value varied from 20.8 for successful female athletes to 22.8 for unsuccessful male athletes. This aspect framed the athletes within the normal range (18.5-24.9) and probably close to the lower limit, because the study included elite athletes with much more developed muscle mass compared to the population (Bickley & Szilágyi, 2003, quoted by Kazemi et al., 2006). The mean BMI value for winners was generally lower than that of unsuccessful athletes, but without statistical significance. This might suggest that successful athletes had a suppler body and a lower BMI than unsuccessful athletes.

**Material and method**

**Purpose of the research.** This paper is a qualitative study based on the video analysis of athletes’ performance during the Senior World Championships, according to their somatic particularities. Thus, the research purpose is to investigate the relationship between some somatic particularities and sports performance in WTF TKD using the Dartfish Video Platform.

**Video analysis method.** Lately, the use of visual research methods has become increasingly widespread in scientific research. Visual research methods are nowadays deeply rooted in the major areas of investigation of sociology, health, health care and educational research. The rapid development of information technology promotes the creation and editing of digitized data and computer-based techniques for the storage and management of visual data, which means that new methodological approaches are being developed and considered for the near future.

DartfishTV is a strong video platform to share files, which integrates a number of features of Dartfish software, enabling the creation and distribution of contents. The opportunities or the chance to interact with the content, along with the control over the way of playing the video content, allow the audience not only to cross the barrier of playing a simple video material, but to better understand it. Online editing facilitates a close relationship between those who offer video contents and those who watch them. Information on the number of views and the rating points can be integrated alongside the video materials for a richer content. Dartfish software or player provides the opportunity to integrate the range of enriched contents, so that they can be viewed even without an Internet connection. (Dartfish, 2015)

DartfishTV is an integrated solution across multiple platforms (software, online, mobile), which allows users to make video captures, view real-time events, upload, organize and share video clips via the Dartfish Tagging television channel, and also to choose specific events or series of events in their videos, so that coaches, athletes and business managers can identify specific statistics or important moments in the video clip and navigate directly or share those moments.

For this research, matches were captured and processed using the Dartfish Video Software Solution (Figures 1 and 2) of the World Taekwondo Federation and they were viewed with the SilverLight_x64.exe program.
Presentation and interpretation of the research results

Video analysis using the Dartfish Video Platform revealed the following:

Out of the total number of 736 matches that took place at the 2015 Senior World Taekwondo Championships held in Chelyabinsk, Russia, we analyzed 30 matches. The criterion underpinning our analysis was the anthropometric one. Thus, there were analyzed only those matches where the difference in height between the two competitors was more
than 15 cm, and the difference in their body weight was plus or minus 2-3 kilos. Graph 1 shows that, out of the matches analyzed, a relatively significant percentage of 34% were won by athletes of short stature and 66% were won by tall athletes.

As regards the way of winning, TKD fighters won as follows: on points - 67% (of which 38% by tall athletes and 29% by short athletes); by a difference of more than 12 points - 16% (won by tall athletes through technical superiority); on the golden point - 14% (where athletes won equally); by disqualification - 3% (short athletes were disqualified for the accumulation of a large number of penalties).

In Graph 2, it can be noted that, for both males and females, the technical actions that score most are Bandal chagi and Yeop chagi, executed at an intermediate level. During the 30 matches analyzed, there were executed 196 attacks that brought points to the competitors. Of them, 35% were won by short-statured athletes and 65% by tall athletes.
From Graph 3, it is noted that, in attack, over 50% of short-statured athletes prefer technical kick actions (Bandal chagi) and over 20% of them use technical arm actions (Jireugi). Regarding the technical attack actions of tall athletes, it can be seen that over 50% use Bandal chagi, over 20% use technical side kick actions (Yeop chaogi) and 15% use technical actions. Thus, Graphs 3 and 4 highlight that the way of getting points is clearly in favor of the attack actions (91%). Both tall and short athletes prefer the attack, whether simple or multiple, as a way of scoring, the counterattack being more difficult because of the difference in height between the two fighters.
As can be seen, of the total number of technical actions carried out by tall athletes, only 9% score, and of the total number of techniques reaching the target, only 14% bring points.

Graph 6 indicates that, in the case of short-statured athletes, of the total number of technical actions carried out, only 6% score, and of the total number of techniques reaching the target, only 8% manage to bring points.

**Discussion and conclusions**

Previous research has emphasized that the somatic type of the TKD athlete is stronger and better shaped compared to sedentary people (Qi & Gao, 2004), and with the approval of TKD for the 2000 Sydney Olympics, it has become the object of extensive research studies, an area of interest being the identification of success factors. Some specialists in the field think that the most important success factors in sports include technical, tactical and mental conditions, as
well as competitive experience. In this context, the study achieved by Sadowski et al. (2012) has highlighted that, in TKD, tall athletes are advantaged in winning matches due to their somatic particularities.

Also, the study conducted by Noh, Kim and Kim (2013) on a number of 51 elite TKD athletes and 30 non-athletes has revealed that there are specific physical differences between elite TKD athletes and non-athletes. According to the results of this study, TKD athletes have higher values for the ectomorph components than non-athletes, and the endomorph and mesomorph components of elite athletes are lower than in non-athletes. Moreover, the study has shown that Gyorugi athletes are taller, and the ectomorph body-type athletes are more often encountered in Gyorugi than in Poomsae events. In the case of Gyorugi athletes, lighter weight classes were positively correlated rather with the ectomorph components and negatively correlated with the endomorph and mesomorph components. For the class of athletes weighing less than 80 kg, the highest value was represented by the mesomorph type and the lowest value, by the endomorph components.

Consequently, many researchers have become interested in establishing the correlation between different success factors (morphological, biomechanical, physiological, psychological and coordination factors) and performance in TKD. This study is in line with international studies and highlights the significance of somatic factors in winning TKD matches. Thus, it has been found that over 70% of matches are won by athletes whose somatic characteristics belong to the mesomorph type. According to studies, the athletes included in this category have a very efficient metabolism and easily control their body weight and body fat percentage.

It is interesting to note that the analysis of matches using the Dartfish Video Platform has confirmed the working hypothesis, according to which the athletes’ somatic particularities can influence sports performance in TKD.

At the end of this research, we can wonder whether the significant difference in height between two fighters generates special preparation plans. The answer is in the affirmative, and as an argument, we can say that, according to the results of this study, technical actions that score are clearly in favor of those executed in attack (91%). Also, a percentage not at all negligible (34%) of athletes who won the matches included in this analysis have a short stature. Thus, based on the obtained data, one can develop preparation programs which can lead to an expected goal for the athletes.

In the case of short athletes, technical actions that bring most points are those performed at an intermediate level, mainly in attack and fewer in counterattack, whether simple or multiple, as a way of scoring, the counterattack being more difficult because of the difference in height between the two fighters.

After this research, we believe that using the Dartfish Video Platform is a remarkable option, due to both the multitude of data and the maximization of real-time viewing. In this context, we think that video analysis is one of the most advanced technologies that can be successfully used in sports preparation, as it helps maximize the training process. Thus, in our opinion, the results of this research can be scientific arguments for the national team or club coaches to make important decisions regarding the preparation of juniors for sports performance (Păunescu et al., 2014).

Acknowledgement

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References


UNDERSTANDING THE VALUE OF FEAR FOR PERFORMANCE IN SPORTS

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Abstract. The Romanian socio-cultural sports universe provides as educational background a series of attitudes, an universe of values. Among them, devaluing, but mostly disregard of the human emotional component has been solidly supported by the broader social context. Possibly as a consequence of it, the attitude towards fear, in particular, seems to be a negative one, fear being the confirmation of a weakness. The forms of expressing fear (from a simple fear, or fright, to horror), the way it manifests somatically and mentally, the variation of behaviours under the pressure of fear, the blockage under the pressure of fear, the “disease of fear” (the anxiety disorders), the fear-courage-trust triad, all are important particular aspects of the emotional universe, which support an attitude towards valuing fear. In sports performance, understanding this attitude, understanding the value of fear, that is a bridge, a solid basis for a performance career.

Keywords: performance career, fear, trusting fear.

Introduction

After an important competition, one of the questions inevitably addressed to junior or senior athletes by the reporter is: “So, were you nervous?” The answers vary from a categorical and sharp “No!” or a “No” followed by sustained argumentation about experience and preparation, to a timid and seemingly guilty “Yes”, like expressing an inadmissible weakness at this performance level.

It is even more disturbing when this question is asked just before an important competition and the athletes give the same answers, but, obviously, charged with “the tension of the moment”.

Thus, the athlete either consumes mental resources to hide something that s/he perceives as a weakness or has no access to resources, because s/he does not know clearly the own feelings in the given situation.

In this case, fear (anxiety) is one of the emotions. And it is a value, in spite of the fact that Romanian cultural universe has, in this regard, a particularity, by supporting the contrary. This, most probably, comes from education and the sequencing of events in the last century, when emotionality, feelings were avoided, devalued under the pressure of “let us be rational” (Rădescu, 2014).

Anxiety and fear are, basically, terms with the same meaning. However, in literature, differentiations are also clarified (American Psychiatric Association, 2013).

Important resources can be used, reoriented towards performance by a repositioning towards fear, by understanding it and developing a different attitude towards one’s own fear and fear in general, an attitude integrated into one’s own personality structure, one’s own emotionality, and not just an affirmative, cognitive, theoretical attitude (in other words, an attitude of doing with conviction “what the doctor says”, and not just “smoke like him”, “but promoting intensely the fight against smoking”).

Supporting a theoretical model (for fear, in this case) is fundamentally only critical. After exposing a theoretical model, a single question arises unequivocally: “Is it so?” (Heidegger, 1975), is it really so? Correlated to this, any approach to applied or theoretical research, generally accepted as scientific, has an implicit subjective substrate (Rogers, 1961). It sends primarily to an ontological positioning (Meixner, 2004) focused on the study of human being, of existence, and the acceptance of an undeniable truth: things exist but they just seem to me, just appear to me in an I-you relationship (I-he/she, according to Buber, 1923), included and supported above all by a world.

With this background, attitude makes the difference (Churchill quoted by Mishta, 2011). Attitude involves a philosophical component (a philosophy of life, a universe of values) and an emotional substrate (an attitude-feeling or attitude through feeling).

Fear is, starting from these considerations, a fundamental value for man, a royal path to existence (Heidegger, 2003). Fear, despite a generally accepted opinion in the Romanian cultural area (Rădescu, 2014) and not only, is valuable (Längle, 2000), and its undesirable existence is beneficial, is healthy, is practical (and has a pragmatic valence) for performance sports.
At a quick glance and reviewing briefly the phenomenology of daily sports, the attitude towards fear is one of denial, misunderstanding or devaluation. Perhaps the worst, in terms of the negative impact on the athlete, fear is a label, a distinct sign for weakness.

In specialized literature, there are numerous references to methods and techniques to approach fears, anxiety (Sadock, Sadock & Ruiz, 2003), usually aimed to maintain control (Hoffman & Jasper, 2008) in the moments of maximal mental pressure or the moments of being overwhelmed by fear.

Starting from these extremes in treating about fear, we shall try to present systematically its universe, passing through a picture of fear as a reality, its definition (rather its relative defining, a way of understanding) and its practical approach, valuable for performance sports and everyday life, an approach as simple theoretically as it is demanding in practice.

Topic addressed

What is fear? A state of physical and mental (psychosomatic) inner restlessness, appearing individually in a situation, perceived as dangerous or threatening (e.g. I see a dog away, it does not jump at me - fear appears as a sign of danger, I still can avoid it, it is up to me to do so; I see a dog coming in a rush towards me, ready to bite me, and it is already very close, two feet away - fear appears as a sign of immediate threat, mostly it is not up to me, any longer, about what I can do). Because fear has an individual, subjective character, it presents a large variation of manifestations and intensities differing from one person to another. Losing the feeling of support, the vital space or the protection encompasses the themes which are endangered or threatened (Längle, 2007). Fear is a feeling (Plutchik & Kellerman, 1980), a primary or basic emotion (Längle, 1996) relating to the psychic dimension (the psychic is one of the three dimensions of the human whole: somatic, psychic and noetic ones, Frankl, 1984), and it has a rich somatic expression.

What particular forms takes the fear? Fear itself is something general, diffuse (named usually anxiety), with or without a clear source, with an oscillating continuity character (e.g. without knowing why, without any reason, I feel a slight fear in the morning, when I wake up). Specific fear - involves the existence or the diffuse shaping of a clear source of danger or threat (Längle, 1996, e.g. fear of the dark, fear of flight, fear of bacteria, etc.). Explosive fear (scare) - its character is given by the great surprise and intensity felt about a danger or threat (Längle, 1996, e.g. the pussycat attacks the dog and takes it by surprise, the dog runs away, then “it comes to reason” and runs after the cat). Terrible fear (terror) - it shakes my familiar world, anticipates an event (Längle, 1996, e.g. in a horror movie, fear is felt until the “monster” appears; see King with his Danse macabre, 1981). Sinister fear (horror) - it is beyond what I could ever imagine to exist and appears after the occurrence of a surprising, unbelievable event; it comes from the existence of the fact itself (Längle, 1996, e.g. the horror of the Holocaust).

Regarded from the time perspective, fear is that existing at the present moment or that of a projection in the future, of anticipation.

How does fear manifest? At the somatic (anatomic-physiological-metabolic) level, one can distinguish punctual momentary manifestations and lasting manifestations (“side effects”). Momentary manifestations include all apparatus and systems of the human body, with specific individual variations: tremor of the limbs, loss of motor accuracy, trembling voice, tachycardia, sometimes extra-systoles, dryness of mucous membranes, superficial hyperventilation, apnea, sweating, nausea, vomiting, dizziness, frequent and urgent urinations, lipothymy etc. (Sadock, Sadock & Ruiz, 2003).

Among the lasting manifestations associated to states of fear, there are: alterations of appetite, gastritis, intestinal transit disorders, hypertension, disturbances in the circadian or menstrual cycles etc. (Längle, 2009).

Mentally, the background sensation can be that of restlessness, agitation, sensations of hot, dizziness, nausea, suffocation, constraint etc. (Sadock, Sadock & Ruiz, 2003).

“Sublimation” seems to be a particular form of transforming fear into other affects (e.g. an intense fury); or merely its apparent extinction through a process of dissociation, of emotional separation from the context (traumatic dissociation, Längle, 2005).

Physiology of fear involves three stages: (1) a first stage of onset, of alerting the body and preparing it to face danger, threat; (2) a second stage, a plateau phase of maximal psychosomatic alert, of optimal alertness; (3) a third
stage, a diminution, reduction and disappearance of the state itself (Guoshi, Nair & Quirk, 2009). Depending on the type of fear, these stages, with different intensity, may last from several tens of seconds (thrills of fear) or minutes to maximum 20-30 minutes (in a panic attack), or even more when natural or pathological mental blockages appear.

What do I tend to do (which is my first impulse, what do I feel urged to do, what do I feel like doing) when I am afraid? In the Viennese existential literature (GLE International), there are four basic dynamics described as an impulsive behaviour (with no degree of freedom, of decision, a “psycho-reflex”) against fear: withdrawal, activation, aggression and blockage or the reflex of mimicking death (Längle, 2007).

Withdrawal is the most economical way of reacting where danger or threat is still at a comfortable distance (e.g. the dog jumps at the gate just when I am about to enter the neighbour’s yard, and instinctively I step back, I stay away - Furnică, 2006). Activation, mobilization, preventing danger or threat, as strictly subjective feelings in a situation, usually occur when the situation does not allow any longer an evasion, a withdrawal (e.g. I open the neighbour’s gate, I step in his yard and the dog jumps at me barking, and I reflexively shout back at it and I go towards it - Furnică, 2006). If the situational stimulus is felt as even more dangerous, more threatening, with no escape, there is onset of aggression (hate), which is somehow destructive for the stimulus and implicitly protective for the subject. In other words, hate is the one which protects us in a situation where we, subjectively, feel that a threat is at the limit, is “either you or me” (e.g. the dog has jumped at me, the gate is almost closed behind me, I have no way out and I reflexively jump and hit its head with my boot, with the clear intention of protecting myself but also throwing it down - Furnică, 2006).

In some situations, when the stimulus is overwhelming, a blockage appears, paralysis, freezing (my fear of the bear sitting in front of me, near the neighbour’s dumpster, is so intense that I became paralyzed by fear, I remain petrifed). If the situation persists, physical and mental freezing may lead to mental escape, a passage to a parallel mental world, a psychosis (“Spaltung”, Bleuler, quoted by Sadock, Sadock & Ruiz, 2003), which is transitory, adaptive (e.g. suddenly, after remaining paralysed in front of the bear, I have a feeling that I see the situation from somewhere above, I see me and the bear from somewhere outside of me, I feel like being a witness to the situation). And if the stimulus that has created fear persists even more, this may lead to a psychotic blockage (Längle, 1996), which does not disappear for a while after removing the initial stimulus.

What is the role of fear? What is its value? Fear shows me that something valuable for me, something important to me and my life is at stake, it is threatened.

What can I do when facing fear? If I feel fear: (1) I can see it but I do not look at it, it is indifferent to me; (2) I take a squint at it but I sweep it under the carpet, I ignore it; (3) I see it and I focus on it, I do something for protecting, preserving the indicated value; (4) I see it and focus on it, I augment its value, importance, I cling to it (I became obsessed with it); (5) I see it and focus on it, I add fuel to the fire, I panic; (6) I see it and feel overwhelmed, helpless when facing it, it is beyond me, it inundates me, it suffocates me; (7) I see it and I dissociate from it, for the moment, in order to be able to go on working, to get out of the situation.

If I do not feel fear, I may be “blind”, helpless and vulnerable in those situations where the onset of fear would have helped me.

How can I approach fear? Fear is beyond the direct control of my will. It is a feeling, an emotion. It is born within me (Längle, 1996). Clarifying reality, the concrete life experience makes fear decrease, vanish (anxiety therapy involves understanding reality as it is; this provides the opportunity to really be alive). When the reality (external to I reality) generates fear, understanding reality, knowing its important, valuable details makes the intensity of fear decrease to extinction.

What do I need for approaching fear? Courage is the catalyster that helps me connect with reality, accept it, turn it into a support for myself. Courage is like a needle with thread that sews the net of trust across a sea of fear. By courage, my support gets consistency across the abyss generating fear.

Supply for this support may also come from a relationship (Längle, 1996), as a contamination through the trust of the one next to me. Courage, this “I pluck up my heart”, involves an act of will. It is a bridge between the psychosomatic and noetic/spiritual sides. Trust is born. It is undetectable, has no psychosomatic echo. It is impalpable, it is part of the noetic dimension of man. Trust is a feeling. We feel it when it is gone, not when it is present. We feel it when it disappears and its place is taken by fear. To be born, it needs favourable conditions: support, space, protection
(Längle, 1996). Gradually, it consolidates and can be maintained for a few moments there where the support disappears, where space and protection disappears too. Trust may become an attitude, an attitude-feeling. Then, I “walk on water”!

What is the “disease of fear”? Anxiety disorders include a classification of “diseases” with a pathological mechanism related to fear. In our days they do not pursue any longer the underlying psychodynamic processes, but only a symptomatic conglomeration.

However, in terms of performance in sports or in life, these classifications have no practical value (Wedge, 2012), on the contrary, they may burden.

It is worth for us to understand that the existential blockage through defence mechanisms (through “mental reflexes” or coping reactions, as they are usually called) does not mean “disease”, but calls for the individual’s freedom and responsibility to reduce their impact, frequency and intensity through personal maturation. Mental disorders start where these reflexes take control and dominate life, and the individual does not feel free any longer.

False trust, false courage or the absence of fear where it should be (on the edge of the abyss) is an issue that may affect the dynamics of sports life, despite encouraging results.

Discussion

There is a paradox of fear: I can trust my fear! Performance capacity involves developing an attitude towards the own fear in a competitive situation, in the complex life context imposed by sports performance. The type of attitude, of understanding the vastness of fear-courage-trust universe is a pillar not only for performance, because performance can also be achieved under the unconscious incentive of fear, but for a performance career, for efficiency and continuity in reaching and maintaining performance, for excellence and fair play.

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ANALYSIS OF INDIVIDUAL AND COLLECTIVE ACTIONS FOR REGAINING POSSESSION OF THE BALL PERFORMED BY THE FOOTBALL TEAM “CS PANDURII LIGNITUL TARGU-JIU”

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Abstract. The paper aims to highlight the level of preparation and the problems existing within the defensive compartment of football players from “CS Pandurii Lignite Jiau” in the competitive game, an essential aspect for the preparation of the team, for achieving the objectives and implementing the new tactical conceptions in the training programs. Starting from the premise that progress in football is due to the permanent fight between attack and defence, this element has become the main concern of technicians, whose thinking is focused on discovering new and increasingly sophisticated and efficient means and methods, which, used in the preparation of players, will enable them to win the victory. In this context, the study was conducted on the junior-B team “CS Pandurii Lignite Tg-Jiau”, a participant in the National Football Championship, and mainly aimed to analyse the defensive behaviour of players and the efficiency of their actions, by collecting and interpreting data related to: the defence systems used in the games played at home and away; the type of actions, individual and collective ones; the ball recovery zones; the frequency of tactical actions and combinations in defence. The obtained results have shown that the integration of individual technical and tactical defensive actions to regain possession of the ball into the collective tactical framework of the defence phase depends on the tactical discipline specific to recovery (double coverage, multiple coverage, substitution, exchange of zones or places, exchange of marking, support), considered a basic trait of the game.

Keywords: game system, forms of defence, ball recovery zones.

Introduction

Contemporary football practiced in most countries has a common goal, to be as close as possible to the parameters of “total football” regarded as a collective and spontaneous work, by cumulating the solutions adopted in recent decades in order improve the game components and obtain superior results (Bușe & Ogodescu, 1982). At the level of high performance, the quality of play has considerably increased due to the improvement of technical and physical factors that mainly influence the way of solving the tactical situations in both attack and defence, under conditions of adversity. The level of technical and tactical preparation largely depends on the player’s initial skill level, motor and competitive experience and, not least, the quality of the preparation process (Teodorescu, 2009, 2010). In top performance football, there are pushed further and further the limits of all factors that contribute to acquiring mastery, the players’ biological and psychological capability to cope with the competitive effort, the level of technical and tactical abilities, the preparation time, the intellectual and professional ability of the coach, the administrative and organisational possibilities and facilities, the research and application of scientific data to the preparation of players, as well as the players’ motivation, because high performance football can be practiced only by those athletes who are able to put professional interests above the pleasures that life offers to those who are young and rich (Crevoisier, 1995).

The defensive and offensive expression in the game of football has passed through numerous mutations consistent with the evolution of its content, always seeking to exploit the availability of players as regards their ability to either counteract successfully the opponents’ offensive actions or engage in technical and tactical attacking actions meant to surprise the opposing defence. The dual engagement of the modern player in competitions with an increasingly higher character of adversity requires and promotes the multilaterally prepared football player, with a high degree of technicality applied in a creative way at the tactical level, with resistance to the influential factors, namely the mental, affective and emotional ones triggered by the game (Cojocaru, 2006; Neță & Popovici, 2000). This dual quality that modern football promotes is closely related to the qualities available for each player to participate in the attack and defence actions, which highlights the technical and tactical universalization of each player’s total engagement in the competition demands.

Material and methods

Purpose of the research. The research aimed to know the game systems, the individual and collective technical and tactical actions for regaining possession of the ball, the zone used to recover the ball, the content of play for the studied team in the offensive phase, as an important factor in winning the victory.
Organisation and development of the study. The research was conducted within the Football Club "CS Pandurii Lignitul Tg.-Jiu", on the junior-B group, over 10 games played during the competitive year 2012-2013, when there were recorded the official games in the Republican Championship, junior B, series 6.

Results

Data from the record sheets were systematized, Table 1 showing the number of the official game, the date when it was played, the type of actions for regaining possession of the ball, the zones where the actions were performed for each half separately and the overall individual and collective actions per stage.

Table 1. Centralised data for the record sheets / games

<table>
<thead>
<tr>
<th>Game no.</th>
<th>Stage date</th>
<th>Recovery actions</th>
<th>1st HALF</th>
<th>2nd HALF</th>
<th>Total balls recovered</th>
<th>Total actions/game</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Zone I defence</td>
<td>Zone II defence</td>
<td>Zone III defence</td>
<td>Zone I defence</td>
</tr>
<tr>
<td>1.</td>
<td>09.09.2012</td>
<td>Collective</td>
<td>6</td>
<td>8</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Individual</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>16.09.2012</td>
<td>Collective</td>
<td>7</td>
<td>7</td>
<td>4</td>
<td>5</td>
</tr>
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<td></td>
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<td>Individual</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
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<tr>
<td>3.</td>
<td>23.09.2012</td>
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<td>6</td>
<td>8</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Individual</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4.</td>
<td>07.10.2012</td>
<td>Collective</td>
<td>6</td>
<td>7</td>
<td>3</td>
<td>5</td>
</tr>
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<td></td>
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<td>Individual</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>5.</td>
<td>14.10.2012</td>
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<td>8</td>
<td>3</td>
<td>3</td>
</tr>
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<td>Individual</td>
<td>4</td>
<td>6</td>
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<td>5</td>
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<tr>
<td>6.</td>
<td>21.10.2012</td>
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<td>6</td>
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</tr>
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<td>Individual</td>
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<td>4</td>
<td>2</td>
<td>1</td>
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<tr>
<td>7.</td>
<td>04.11.2012</td>
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<td>8</td>
<td>7</td>
<td>4</td>
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<td>Individual</td>
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<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>8.</td>
<td>18.11.2012</td>
<td>Collective</td>
<td>5</td>
<td>7</td>
<td>4</td>
<td>3</td>
</tr>
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<td></td>
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<td>Individual</td>
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<td>4</td>
<td>3</td>
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</tr>
<tr>
<td>9.</td>
<td>25.11.2012</td>
<td>Collective</td>
<td>4</td>
<td>4</td>
<td>5</td>
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</tr>
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<td>4</td>
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<td>10.</td>
<td>02.12.2012</td>
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<td>7</td>
<td>7</td>
</tr>
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<td></td>
<td></td>
<td>Individual</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total actions per zone and game</strong></td>
<td>89</td>
<td>108</td>
<td>71</td>
<td>76</td>
</tr>
</tbody>
</table>

To achieve the intended purpose, namely establishing the origin of actions to regain possession of the ball, the recorded data were dissected separately depending on the zone where the defensive actions took place, their type and amount in each half of the 10 official games.

Table 2. Summary table for the actions to recover the ball recorded in the 10 games

<table>
<thead>
<tr>
<th>No.</th>
<th>Type of actions</th>
<th>Successful actions</th>
<th>Successful actions to recover the ball in 10 games / half</th>
<th>Successful actions to recover the ball within 90 min/zone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As regards the way of conducting the defensive phases, it can be found that the number of individual actions (177 actions) is smaller by far than the number of collective actions (329 actions), almost under half, which is very good for a junior II team, in terms of game relations and collaboration between compartments, meaning that the team practices a collective game and the game conception is based on the collaboration between compartments and lines, on a constructive play (Figure 1).

![Fig. 1. Collective and individual actions to recover the ball](image)

The analysis of collective and individual actions performed in both halves highlights that the team has achieved a total number of 526 collective and individual attacking actions during the 10 games, with an average of 52.6 actions, of which: 268 actions carried out in the 1st half, with an average of 19.6 game actions, of which 89 were performed in zone I, 108 actions in zone II and 71 actions in zone III; 258 actions carried out in the 2nd half, with an average of 17.6 game actions, of which 76 were performed in zone I, 112 actions in zone II and 70 actions in zone III.

![Fig. 2. Recovery actions performed by the team “CS Pandurii Lignitul Tg-Jiu” per half and zone](image)
Figure 2 shows that most actions for regaining possession of the ball in both halves have been performed in zone II of the field, namely in the zone where the attack is constructed, and in zone I, which means that the team is grouped and plays with the lines very up or, to be more specific, the play is organised and the team, after losing the ball or after scoring, is concerned with blocking the opponents in their own field or in the central zone.

In terms of regaining possession of the ball in the three zones of the field per half, it can be noted a small decrease in the number of actions during the 2nd half, which leads to the conclusion that the game is very well organised, and the team is also well prepared physically.

Figure 3 also shows, just as previously mentioned, that the individual actions for regaining possession of the ball are smaller in number than the collective ones, but analysing the graph and the number of actions carried out in the 10 games shown in Table 2, it is noted that the individual actions to recover the ball in zone III are more numerous than in zone I, which means that the team has moments when it is surprised with balls behind the defence line, generating 1 against 1 duels which can decide the development of a game.

Conclusions

Specialisation and ultra specialisation in regaining possession of the ball currently aim to establish in the smallest details the technical and tactical activity of each player in each zone and corridor of the playing field, just because recovering the ball means removing the effects of the opposing attack, possessing the ball and, not least, it means immediate attack with big chances of success.

The football team “CS Pandurii Lignitul Targu-Jiu” manages to solve the moment of regaining possession of the ball in zone I and respectively zone II of the defence phase, because, on the one hand, it prevents the danger of being attacked by the opponents, who reach their own defensive zone III, and avoids receiving a goal, and on the other hand, the ball recovery in zone I or II provides them the opportunity to initiate a quick attack or counterattack, or even to score immediately (when the ball recovery occurs in the own defensive zone I).

But the team under study is vulnerable to the balls thrown behind the line by the back due to the game played in the superior third of the field, creating a large space between goalkeeper and the last defenders. As mentioned before, this space generates 1 against 1 duels which can change at any time the development of a game.

References

THE STRATEGY OF TRAINING THE CHILDREN IN STAGE I – HANDBALL

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Abstract. Achieving world-class performance requires a lengthy preparation period of about 11-12 years. Kunst-Ghermănescu shows that the age of the first contact with handball for children is around 10 years old. In this paper, we do not want to argue him, but we want to adapt the preparation in handball to the conditions of today's society. Therefore, we believe that the age of 10 is relatively late for the first contact with handball. Nowadays society has produced important changes in children's behavior, they becoming increasingly more sedentary. Children, even at a young age, no longer leave the house to play outdoors and they spend their time at home in front of the TV or computer. As a result, skills considered of the childhood (running, jumping, climbing, throwing, etc.) cannot be found in the motor baggage of the children. In addition, the age of 10 is beyond the age at which we can arise easily and successfully the speed and coordination abilities. So, we believe that the age of 6-7 years is the ideal age for the first contact with handball.

Keywords: stage I, handball, training, training cycles.

Introduction

“Sports training, as a long-term process, requires the preparation of athletes to spread out over several stages, determined by the characteristics of age, and to be adapted to the general availability of the body” (Teodorescu, 2009). Long-term preparation comprises several stages, each with intermediate objectives, they actually pursuing the ultimate goal, achieving top sports performances. “Just a workout spread out over several years allows for increased level of results”. (Platonov, 1996)

Platonov believes that the multi-annual planning of training requires five steps:
- Initial training stage;
- Preliminary basic training stage;
- Specific training stage;
- Preparation and obtaining maximum performance stage;
- Maintaining the achieved level stage.

From the perspective of long-term preparation for the game of handball, we consider fair the division made by Platonov, with the amendment that, instead of “steps”, we will use “stages”, a term used in the theory of training in Romania. Consequently, the preparation stages in handball, from our point of view, are the following:

1. Stage of general education - includes children aged between 6/7 years and 10 years;
2. Stage of sports formation - includes children aged 11 to 14 years;
3. Stage of specialized training - includes young people aged between 15 and 18;
4. Stage of achieving the maximum performance - includes athletes aged between 18 and 24;
5. Stage of maintaining the achieved level - includes athletes aged over 24 years.

These stages follow each other chronologically and it is very important to respect their limits, especially in terms of programming the training content and the level of effort required. From the methodical point of view, there are some similarities, especially between the second half of stage II with the first half of the third stage.

“Sports training does not constitute an undifferentiated educational process, its tasks, means, methods and forms of organization, especially in children and youth, differing from one age to another”. (Șiclovan, 1972)

Strategy training in stage I

The first stage of the lengthy preparation is called “general preparation stage”. In this stage, there are included children aged 6 to 10 years. The main objective of this stage is the learning of basic motor skills, which will be used later, when starting the game of handball. The general objectives of this training stage are (Hantău, 2014):
- optimization of harmonious physical development;
- improvement of overall motor skills and formation of a rich baggage of motor skills;
- the multilateral development of motor skills, with a focus on speed and coordination abilities;
- accommodation with the ball, the playing field, the goals, the teammates and the opponents;
- education of the team spirit and competitive spirit;
- education of the qualities of will and perseverance;
- education of the sportive behavior.

In methodical terms, the first stage of training is divided into two main phases:
- the phase of basic training - 6-8 years;
- the phase of conducted basic training - 8-10 years.

In its turn, the basic training phase is divided into two sub-phases:
- habituation with the ball - 6-7 years;
- habituation with the partner - 7-8 years.

The phase of conducted basic training primarily aims to habituation with the opponent. The training objectives during the phase of basic training are:
- the harmonious physical development;
- training the basic motor skills;
- educating motor skills in their general form, with a focus on the development of coordination abilities and speed;
- training the ball sense;
- educating the teamwork ability;
- developing the capacity of practicing physical exercises in an organized form, based on the playing instinct of the children;
- improving health;
- educating attention and discipline.

The training objectives during the phase of conducted basic training are:
- the harmonious physical development;
- initiation into the handball-specific motor skills in motion and against the opponents;
- training the field sense;
- introduction to the basic handball rules;
- education of motor skills in their general form, focusing on the development of coordination abilities and speed;
- participation in mini-handball tournaments;
- increasing the combative spirit and building the team spirit.

Stage I is the most suitable training stage for using the alternative materials. Alternative materials are other materials than those which are normally used during training.

“There are multiple ways to use the materials during a handball workout: the first possibility relates to the specific material for handball, the second possibility is to use unspecific materials for handball and the third possibility is to create alternative materials for playing and practicing handball”. (Anton et al., 2007: 42)

Using at these ages the alternative materials helps to improve the quality of learning by interconnecting various sports. This aims at the variation of working themes and increasing the children’s creativity.

The materials unspecific to handball are materials used in athletics (low hurdles), gymnastics (mattresses, trampolines, benches, plinths, etc.) or other sports (softball or volleyball, hoops, cones, balance fits, etc.).

Alternative materials can be created from recyclable materials. So, from PET bottles filled with sand, one can make small weights or targets in which the children can throw balls or different objects, from pieces of sponge and rope, one can make workout ladders, etc.

Therefore, for the training of children of this age, it is highly recommend the use of different materials.

In stage I, the training is generally directed towards the movement games, while the analytical exercises of learning and consolidation are underused. The use of movement games is the perfect way in which the children are predisposed
to training and the learning of basic and specific skills which will be used later in the game of handball. In this period, there are initiated early experiences with the ball, there are educated the coordination abilities and it is carried out an introduction of children to the social environment of sports games. At this level, we aim to form a motor experience without tracking any performance objective. For a better understanding, follow the Table 1.

Table 1. First stage of training in handball (phases, duration and objectives)

<table>
<thead>
<tr>
<th>Age</th>
<th>Phase</th>
<th>Step</th>
<th>Objectives</th>
<th>Content</th>
<th>Competition</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 – 8 years</td>
<td>basic training</td>
<td>6 – 7 years</td>
<td>habituation with the ball; the basic technique;</td>
<td>using and handling the ball (throwing; catching)</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 – 8 years</td>
<td>habituation with the partner; the basic technique;</td>
<td>motor coordination; passing and catching the ball; shooting</td>
<td>No</td>
</tr>
<tr>
<td>8 – 10 years</td>
<td>conducted basic training</td>
<td>habituation with the opponent</td>
<td>building the team spirit; training the field sense; training the capacity to react against the opponent.</td>
<td>games in which the opponent opposition appears; motor coordination.</td>
<td>Local mini-handball competitions</td>
</tr>
</tbody>
</table>

Conclusions

In stage I, the training is based on the following assumptions in establishing the training methodology:

- mini-handball is not the adult handball;
- mini-handball helps to develop the basic skills for the further practice of handball;
- mini-handball is a ball game, so it is a way for children to play.

Due to these reasons, we can say that the principles guiding the training in this stage are:

- the specific rules, methods and means for adult training have nothing to do with this level;
- absolutely all training sessions at this level are based on the playing instinct;
- used as a means of training, the games are oriented towards well-established objectives, and the entire training is based on the idea: “learning by playing”;
- the background of the training sessions is fun and good humor;
- the children must experience different forms of movement;
- the basic motor skills are formed by the movement games;
- we shall apply the principle of variation to avoid boredom and stimulate attention; we shall change the tasks, so the child will be forced to adapt to the new, this being an important element in the learning process;
- the focus is on speed and the coordination abilities.

References


PERSONALITY PATTERNS IN ADOLESCENT ATHLETES

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Abstract. It is also known that adolescence is a period lived intensely, tumultuously, being a continuous search for the self across the social egos. The purpose of this research is to assess the expression level of personality characteristics in adolescents who practice individual or team sports, in order to achieve a profile as pertinent as possible. Sample of adolescent athletes included 33 participants (34% female and 66% male), with a mean age of 17.3 years (+/-1.2). To evaluate personality patterns we use Millon Adolescent Clinical Inventory - MACI (McCann, 1999). Practicing sport can be a significant factor for the development of identity, self-esteem and competencies in adolescents. Although the scores achieved by both adolescent athletes and non-athletes for the Personality Patterns scales do not raise special problems, there are some differences between them. The results of this research have highlighted that sport is the most suitable way for adolescents to learn new skills associated with character values, such as responsibility, conformity, perseverance, risk-taking, courage and self-control.

We think that it is absolutely necessary for the adolescent to understand the role of sport in the opportunity to better define their identity, to discover and develop some social and cognitive skills.

Keywords: personality, adolescent, athletes.

Introduction

Puberty and adolescence are characterized by the transition to maturation and the integration into adult society, with its social, familial, professional demands. The entire period of adolescence is related to high-intensity changes, with visible effects on the look, behavior and internal relationship with the outside world, inclusively by increasing the ability to integrate into the specificity of social life. This is the background for building “the self”, self-image and self-perception - as a component of “identity”, which, in its turn, is the core of personality (Șchiopu & Verza, 1997).

It is also known that adolescence is a period lived intensely, tumultuously, being a continuous search for the self across the social egos. While searching for the identity of their place in the world and the group of belonging, adolescents go through a stage of life strongly impregnated affectively and intellectually. Adolescence represents the big step of social adaptation, when inner needs and external pressures that lead the teenager to adopt a strategy of life, to reflect more deeply on their person and the surrounding world. In this context, sport can be an alternative to the formation of identity for people in this age group.

The purpose of this research is to assess the expression level of personality characteristics in adolescents who practice individual or team sports, in order to achieve a profile as pertinent as possible.

Material and method

Participants in the study. The sample of adolescent athletes included 33 participants (34% female and 66% male), practitioners of individual sports (badminton 27%, athletics 9%, motocross 6%, fencing 8%, karate 3%) and team sports (basketball 26%, water polo 12%, football 9%), with a mean age of 17.3 years (+/-1.2).

Millon Adolescent Clinical Inventory - MACI (McCann, 1999). MACI is a self-report inventory with 160 items, specifically developed to assess personality traits and clinical syndromes in adolescents. According to specialists, MACI can be used to formulate diagnostic assistance, confirm the clinical diagnosis and design treatment plans, or can contribute to making decisions on the management and planning of interventions. Recognizing both the strengths and weaknesses of MACI, the test authors provide a balanced and comprehensive resource regarding this assessment tool. The test can also be used as an assessment tool for the results of changes in the intervention or treatment plans. MACI is very useful in the clinical, institutional and correctional environments. Psychologists, psychiatrists, school and judicial psychologists, as well as other experts in the mental health field, will find this versatile instrument essential to:

- perform thorough assessments in order to confirm diagnostic assistance;
- develop individualized treatment plans;
- measure progress before, during and after treatment.
The MACI Inventory differs from other clinical instruments by its brevity, theoretical basis, multidimensional format, tripartite construction and validation schema, the use of base rate (BR) scores and its interpretative depth. The test is self-managed. Most adolescents complete the test in 25 minutes, which minimizes their resistance. Thus, MACI enables to collect the maximum amount of information with minimal effort from the respondents. Also, the test is based on a coherent theory of personality and psychopathology, significantly increasing the inventory’s interpretative value (Test Central, 2015).

Personality scales reflect adolescent variants of the adult personality disorders, refined through Millers’ Evolutionary model. According to the MACI brochure, base rate scores vary between 0 and 115. The Personality Patterns scales are the following (Millon et al., 2009, pp. 11-12):

**Scale 1: Introversion** (44 items). Adolescents who achieve high scores tend to internalize, to seem rather quiet and unemotional.

**Scale 2A: Inhibited** (37 items). Adolescents who score high tend to be timid or embarrassed in the presence of others; they would like to have closer relationships with the people around, but they have learned that it is better for them to keep the distance and not to trust the friendship of others.

**Scale 2B: Doleful** (24 items). Adolescents with high scores typically show emotional states of discouragement and melancholy, probably since childhood; they express a sad, meditative and pessimistic view of life; they have a predisposition to feel guilty or full of remorse, considering themselves as inadequate or worthless.

**Scale 3: Submissive** (48 items). Adolescents who achieve high scores tend to be sensitive, sentimental, good and kind in the relationship with others.

**Scale 4: Dramatizing** (41 items). Adolescents with high scores are communicative, charming, often exhibitionists and emotionally expressive; they tend to have intense but short-term relationships with the people around; they search for interesting experiences and new forms of adventure; they often get bored with routine or long-term relationships.

**Scale 5: Egotistic** (39 items). Adolescents who score high tend to be very confident in their abilities and are often perceived by others as self-focused and narcissistic; they rarely put into question their own value; they tend to believe that they deserve everything in the relationship with others; they are arrogant, abusive and less concerned about the needs of others.

**Scale 6A: Unruly** (39 items). Adolescents with high scores tend to behave in an antisocial manner, often resisting the efforts of others to make them adhere to socially acceptable behavior standards; they tend to display constantly a rebel attitude, which may generate conflict with parents, school or legal authorities.

**Scale 6B: Forceful** (22 items). Adolescents who achieve high scores are stubborn and rigid, tending to dominate or abuse the people around; they often put into question the rights of others and prefer to control most situations; they are often rude and inattentive, tending to be impatient with the problems and weaknesses of others.

**Scale 7: Conforming** (39 items). Adolescents with high scores are serious, efficient, respectful, aware of the rules, always seeking to do what is right; they tend to keep their emotions under control, to be tense; they prefer to live their lives in an orderly and well-planned manner.

**Scale 8A: Oppositional** (43 items). Adolescents with high scores tend to be scornful, sullen and passively aggressive. They always behave in an unpredictable way; they can be kind and nice at a moment in time and hostile and irritable immediately after; they often feel confused and upset about their affective moods, but they seem unable to control them for a long time.

**Scale 8B: Self-Demeaning** (44 items). Adolescents who score high tend to be their own greatest enemy, behaving in a self-defensive way and seeming sometimes even satisfied with their suffering; many seem to undermine the efforts of others to help them; they can refrain from pleasures and can sabotage their own efforts to reach success.

**Scale 9: Borderline Tendency** (21 items). Adolescents with high scores often show severe personality disorders, displaying rather pathological variants of previous personality traits and characteristics; high scores suggest significant affective instability, capriciousness, impulsive hostility, fear of abandonment and potentially self-destructive actions.

**Analysis and interpretation of the investigation results**

Raw scores obtained by each adolescent were converted into BR scores depending on gender, according to the Brochure of Adaptation for the Romanian Population. For the statistical analysis of data, it was used the SPSS for
psychology program, version 19. The following tables provide a descriptive analysis of the Personality Patterns scales for the average BR scores obtained by the sample of adolescent athletes.

Table 1. Descriptive statistics for each scale of Personality Patterns depending on the practiced sport

<table>
<thead>
<tr>
<th>Sports/Patterns</th>
<th>1</th>
<th>2A</th>
<th>2B</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6A</th>
<th>6B</th>
<th>7</th>
<th>8A</th>
<th>8B</th>
<th>9</th>
</tr>
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<tbody>
<tr>
<td>Mean</td>
<td>45.88</td>
<td>52.31</td>
<td>32.25</td>
<td>59.00</td>
<td>57.31</td>
<td>36.56</td>
<td>27.56</td>
<td>72.56</td>
<td>34.63</td>
<td>35.50</td>
<td>36.31</td>
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<tr>
<th>Sports/Patterns</th>
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<th>2A</th>
<th>2B</th>
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<th>4</th>
<th>5</th>
<th>6A</th>
<th>6B</th>
<th>7</th>
<th>8A</th>
<th>8B</th>
<th>9</th>
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<tbody>
<tr>
<td>Mean</td>
<td>62.38</td>
<td>55.38</td>
<td>55.00</td>
<td>54.06</td>
<td>55.25</td>
<td>51.87</td>
<td>49.56</td>
<td>60.75</td>
<td>56.50</td>
<td>49.63</td>
<td>54.50</td>
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<th>Sports/Patterns</th>
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<th>7</th>
<th>8A</th>
<th>8B</th>
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</thead>
<tbody>
<tr>
<td>Mean</td>
<td>54.12</td>
<td>53.84</td>
<td>43.63</td>
<td>59.91</td>
<td>57.13</td>
<td>54.59</td>
<td>43.06</td>
<td>66.66</td>
<td>45.56</td>
<td>42.56</td>
<td>45.41</td>
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<tr>
<td>Standard Deviation</td>
<td>15.21</td>
<td>12.07</td>
<td>22.23</td>
<td>18.18</td>
<td>11.75</td>
<td>23.51</td>
<td>23.91</td>
<td>25.39</td>
<td>20.08</td>
<td>17.66</td>
<td>22.09</td>
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</tr>
</tbody>
</table>

Note: 1=Introversive; 2A=Inhibited; 2B=Doleful; 3=Submissive; 4=Dramatizing; 5=Egotistic; 6A=Unruly; 6B=Forceful; 7=Conforming; 8A=Oppositional; 8B=Self-Demeaning; 9=Borderline Tendency

Table 2. T-test for independent samples – athletes

<table>
<thead>
<tr>
<th></th>
<th>Levene’s test for equality of variances</th>
<th>Test for equality of means</th>
<th>95% Confidence interval for differences</th>
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</thead>
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<tr>
<td></td>
<td>F</td>
<td>Significance</td>
<td>T</td>
</tr>
<tr>
<td>1 Introversive</td>
<td>2.613</td>
<td>.116</td>
<td>-3.618</td>
</tr>
<tr>
<td>2A Inhibited</td>
<td>0.002</td>
<td>.962</td>
<td>- .712</td>
</tr>
<tr>
<td>3 Submissive</td>
<td>17.839</td>
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<td>1.893</td>
</tr>
<tr>
<td>5 Egotistic</td>
<td>3.697</td>
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<td>1.104</td>
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<tr>
<td>6A Unruly</td>
<td>10.282</td>
<td>.003</td>
<td>-1.603</td>
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Table 3. Inter-scale correlations for the Personality Patterns – athletes

<table>
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<th>2B</th>
<th>3</th>
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<th>8B</th>
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<td>.6731</td>
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<td>8B</td>
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</table>

**Significant at p<0.01 (2-tailed). *Significant at p<0.05 (2-tailed).

Note: 1=Introverted; 2A=Inhibited; 2B=Doleful; 3=Submissive; 4=Dramatizing; 5=Egotistic; 6A=Unruly; 6B=Forceful; 7=Conforming; 8A=Oppositional; 8B=Self-Demeaning; 9=Borderline Tendency

Although the average BR scores do not record major values to draw the attention of experts, the descriptive and inferential statistics has suggested some differences in personality between adolescent athletes. Thus, we can shape the profile of Personality Patterns for these teenagers as follows:

The average BR score achieved for scale 1: Introverted has emphasized that adolescents who practice individual sports (45.88; +/-14.73) are less introverted, more talkative and full of emotions, compared to adolescents who practice team sports (62.38; +/-10.76) (Table 1). Also, in the case of scores obtained by athletes who practice individual sports, it is found an asymmetric distribution towards lower values, compared to the distribution of scores obtained by adolescents who practice team sports, where the asymmetry is towards higher values. T-test suggests a significant difference between them (Table 2). Regarding the correlation level of scale 1: Introverted with other scales of Personality Patterns, Table 2 shows that this scale is significantly positively correlated, at the level p<0.01, with scales 2A (r=.627), 2B (r=.6731), 8A (r=.546), 8B (r=.673) and 9 (r=.547) (Table 3). This suggests that as the adolescents who practice sport become introverted, quiet or unemotional, they are more timid in the relationship with others.

The correlation matrix highlights that scale 2A: Inhibited is significantly positively correlated, at the level p<0.05, with scale 3 (r=.397), and negatively with scales 4 (r=-.379) and 6B (r=-.372) (Table 3). These aspects suggest that as the scores for scale 2A: Inhibited increase, the scores for scales 3: Egotistic and 6B: Forceful decrease. In other words, as the adolescents become timid, the confidence in their abilities decreases. It is also noticed a negative correlation between scale 2A and scale 5, at the significance level p< 0.01.
The data indicate that teenager athletes participating in this study are not sad, do not show emotional states of discouragement or melancholy (2B: Doleful: 43.63; +/-22.22); adolescents who practice individual sports are much more confident in their abilities and express a more cheerful and optimistic view of life. The scale 2B: Doleful is significantly positively correlated, at the level p<0.01, with scales 6A (r=.589), 6B (r=.466), 8A (r=.808) and 8B (r=.762). These correlations suggest that as the adolescents become sad and melancholic, expressing a discouraging perspective on life, they become rigid and stubborn or tend to be morose, sullen, showing passive-aggressive behaviors, behaving in a self-defensive manner. Also in Table 2, it can be seen a significant negative correlation, at the level p<0.05, between scale 2B and scale 3: Submissive. In this situation, we can assert that as the scores for scale 2B increase, the scores obtained by adolescent athletes for scale 3: Submissive decrease.

According to the descriptive statistics (Table 1) for scale 3: Submissive, the mean score achieved by athletes depending on the practiced sport indicates that adolescents who practice individual sports have obtained a higher mean score (m=65.75; +/-10.96), compared to that achieved by adolescents who practice team sports (m=54.06; +/-22.14) (Table 1). There are significant differences regarding scale 3: Submissive between adolescents who practice individual sports and those who practice team sports, the latter being less sensitive and kind with the people around; male athletes tend to be more sensitive and kind in their relationships with others (m=61.38; +/-19.101), as opposed to female athletes (m=57.09; +/-16.778) (Table 2). From the correlation matrix, it is found that this scale is significantly negatively correlated, at the level p<0.01, with scales 6A (r=-.811), 6B (r=-.838) and 8A (r=-.661), and with scale 9 (r=-.440) the correlation is significant at the level p<0.05. These correlations indicate that as the adolescents tend to become sensitive, sentimental, good and kind in their relationship with others, the scores for scales 6A, 6B, 8B and 9 decrease, which means that they become more social, having a submissive attitude, but without generating conflicts with parents, school or local authorities, without abusing those around, therefore without showing pathologies of personality traits (Table 3).

The correlation matrix for scale 4: Dramatizing indicates significant differences between adolescents who practice individual sports and those who practice team sports (Table 2). This matrix has revealed that there are positive associations between scale 4: Dramatizing and scale 5: Egotistic, which leads us to assert that as the adolescents become more communicative by practicing sport, more charming and emotionally expressive, they become increasingly confident in their abilities (Table 3).

Regarding the data analysis for scale 6A: Unruly, it is noted that the average BR score is higher for team sports (49.56; +/-26.99), compared to the average BR score for individual sports (36.56; +/-18.00) (Table 1), and this scale is significantly positively correlated, at the significance level p<0.01, with scales 6B (r=.925), 8A (r=.852), 8B (r=.489) and 9 (r=.757) (Table 3). These correlations suggest that as the scores for this scale increase, the scores for scales 6B: Forceful, 8B: Self-Demeaning, 8A: Oppositional and 9: Borderline Tendency increase. It is also found that scale 6A is strongly negatively correlated with scale 6B: Forceful. As to the level of inter-scale correlations for scale 6B: Forceful, it is significantly positively correlated, at the level p<0.01, with scales 8A (r=.805) and 9 (r=.711), and with scale 8B (r=0.443), at the level p<0.05, as shown in Table 2. The positive correlations between these scores suggest that as the scores for scale 6B decrease, adolescent athletes become less stubborn and more flexible, without showing tendencies to dominate those around and deny the rights of others, therefore they become less scornful and aggressive with others. From the correlation table, it can be seen that scale 6B is significantly negatively correlated with scale 7: Conforming. This negative correlation suggests that as the adolescents achieve higher scores for scale 6B, becoming more stubborn and rigid, dominating the people around, the scores for scale 7 decrease, they showing lack of seriousness, efficiency and respect, and being unable to control their emotions. Concerning the value of BR scores for scale 7: Conforming, it is found that the average score obtained for individual sports is 72.56 (+/-21.53), and for team sports, it is 60.75 (+/-28.19). The correlation matrix highlights that this scale is positively negatively correlated with scales 8A (r=-.797), 8B (r=-.549) and 9 (r=-.687) from the MACI Personality Patterns, meaning that as the scores for scale 7 increase, the adolescents becoming serious, efficient and respectful, aware of the rules, always doing what is right, the scores for scales 8A, 8B and 9 decrease (Table 3). Low scores for these scales prove that adolescents who practice sport do not tend to be scornful, morose, sullen or aggressive, being sure of their affective moods, and do not behave in an unpredictable way. Also, scale 8A: Oppositional is significantly positively correlated, at the level p<0.01, with scales 8B (r=.777) and 9 (r=.840). In other words, as the average scores for scale 8A decrease, the scores for scales 8B and 9 decrease too, and scale 8B: Self-Demeaning is significantly positively correlated, at the level p<0.01, with scale 9 (r=.754). Regarding the BR scores for scale 9: Borderline Tendency, it can be seen in Table 1 that the mean score of
adolescents who practice individual sports is \( m = 36.31 (\pm 20.01) \), and for those who practice team sports, it is \( m = 54.50 (\pm 20.78) \). In this context, the average scores achieved for this scale suggest that adolescents participating in this study do not show severe personality disorders, do not show pathological symptoms at the level of traits and character and do not tend to initiate potentially self-destructive actions.

T-test for independent samples has not revealed significant differences for scales 2A: Inhibited, 5: Egotistic, 6A: Unruly, 6B: Forceful and 7: Conforming, as regards the statistical differences between the average scores achieved in individual sports and in team sports (Table 3).

Conclusions

The impact of sport on today’s society is extremely high, it also being a source of major entertainment for both the younger and older people. As mentioned in the specialized literature, practicing sport can be a significant factor for the development of identity, self-esteem and competencies in adolescents. Although the scores achieved by both adolescent athletes and non-athletes for the Personality Patterns scales do not raise special problems, there are some differences between them. The results of this research have highlighted that sport is the most suitable way for adolescents to learn new skills associated with character values, such as responsibility, conformity, perseverance, risk-taking, courage and self-control. The experience of practicing sport facilitates the development of adolescents at all personality levels. By interacting with their teammates or coaches, adolescents are able to establish positive social relationships. In this context, the interaction with teammates will also affect their development, because, as stated by experts in psychological development, these ones can replace parents as the most important source of influence during the development period; due to the nature of sport, adolescents interact and build relationships with colleagues, especially in team sports.

In conclusion, we think that it is absolutely necessary for the adolescent to understand the role of sport in the opportunity to better define their identity, to discover and develop some social and cognitive skills.

Acknowledgement

All authors had equal contributions and accepted the final manuscript.

References


THE EFFECTS OF INDUCED EMOTIONS ON WORKING MEMORY, CREATIVITY, REPETITION SPEED AND PRECISION: A PILOT STUDY

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Abstract. Working memory is a temporary storage system under attentional control (we store, on short term, relevant information) that underpins our capacity for complex thought (involving data processing). Regarding creativity, especially fluency, it refers to the total number of responses, ideas generated in a certain time. Repetition speed represents a conditional motor capacity, while precision is part of coordinative capacities, both of them components of motor capacities. Emotion is a short-lived, subjective transitory state that momentarily interrupts otherwise steady functioning with sudden and unexpected physiological and behavioral changes. It is known that emotions affect thinking, which, in turn, influences the emotional state. The purpose of our study was to examine the effects of induced positive and negative emotions (fear and sadness) on working memory, creativity, repetition speed and precision. The participants were 38 male athletes aged 20 to 22 years, practicing football and martial arts (karate and taekwondo). In order to resolve the research issues, we used: GAPED – the Geneva affective picture database, tests – Working Memory test (within CAS++) tests developed by Cognitrom, Creativity test (adapted after Torrance et al.), “Tapping” test from the Mac-Quarrie aptitude battery and SPSS 20 for statistical processing of data. Using the Wilcoxon test for two related samples, we highlighted significant differences at the end of the emotion induction procedure, in the case of athletes. The study results underline that there are different effects of induced positive and negative emotions (fear and sadness) on working memory, creativity (fluency), repetition speed and precision.

Keywords: working memory, creativity, repetition speed, precision, emotions.

Introduction

Working memory is a temporary storage system under attentional control (we store, on short term, relevant information) that underpins our capacity for complex thought, involving data processing (Baddeley, 2007, p. 1). Defining working memory as a space supposing both information storage and processing allows a clear delimitation of short-term memory, which is defined only as a process implying temporary storage of data. Working memory is highly related to general intelligence (Süß et al., 2002), being involved in a wide range of real-world cognitive tasks, such as understanding, reasoning and problem solving (Engle, 2002). Language comprehension is just one of the many examples of working memory’s involvement in superior cognitive processes. Working memory plays a special role in tasks supposing decision-making, planning and finding the proper solutions in complex situations (Baddeley, 1986, p. 228). Cowan et al. (2007) believe that speed processing is the key-factor that distinguishes people who manifest better or a weaker working memory. Creativity is seen as the ability to produce work that is both unexpected, original and appropriate, useful (Sternberg, 1999, p. 3). People with a high creativity level offer varied responses when confronting the same object. Guilford has remarked that creativity can be measured through divergent thinking test (Hussain, 1988, p. 4). Divergent thinking includes fluency, originality, mental flexibility, elaboration and evaluative abilities. Divergent thinking implies that the stored data are scanned, thoughts flow in diversified directions, and possible solutions are searched. Regarding fluency (the major component of creativity that we used in our research), it refers to the rate of production of all units within all classes. Fluency is measured through all the generated information, through the total amount of ideas (Roco, 2004, p. 210).

Repetition speed or the frequency of movements represents a conditional motor capacity, which consists in the ability to perform an identical number of moves in a predetermined time (Tudor & Gherghel, 2011, p. 48). Conditional motor capacities are directly dependent on physical condition, being based on the metabolic efficiency of muscles and other systems (respiratory, nervous, cardiovascular ones). Precision is part of the coordinative capacities. Coordinative capacities are determined by the processes of gesture control, directing, and they are required to master situations supposing quick and rational actions (Tudor, 2005, p. 123). Both repetition speed and precision are components of motor capacities. Football and martial arts (karate and taekwondo) represent sports requiring fast adaptation of movements, quick data processing and decision-making, depending on new perceptual conditions. Thus, the investigated dimensions (working memory, creativity, speed and precision, as motor capacities) are very important for the individual/team success.
Emotion is a short-lived, subjective transitory state that momentarily interrupts otherwise steady functioning with sudden and unexpected physiological and behavioral changes (Cashmore, 2008, p. 145). The investigations of emotional influences require the induction of emotions to establish their effects (Martin, 1990). It is known that emotions affect thinking, which, in turn, influences the emotional state. Johnson and Tversky (1983) have mentioned that emotion can profoundly influence a lot of cognitive functions. Researchers are right, but in which direction? We ask this question because the research findings are quite contradictory. Raghunathan and Pham (1999) have found that people who experienced sadness manifested preferences towards high-risk options and were not afraid to lose. However, Yuen and Lee (2002) produced opposite findings. Thus, the authors found that people in induced depressed mood were not willing to take so many risks as the people in positive mood or neutral mood. This fact was explained by Jorgensen (1998) – for these people the world is perceived as a threatening place and in such conditions they are more careful to avoid potential loss. Specialized literature outlines another contradictory finding concerning the effects of induced negative emotions. Ellis and Ashbrook (1988) have determined that negative emotions interfere with people’s capacity to process data. Schwartz (1990) highlights that negative emotions alert people about an existing problem. Consequently, people process data in a more vigilant way using rational strategies, and therefore the decision process takes longer. On the other hand, Fiedler (1988) asserts that negative emotions can lead to weaker attention and failure in searching for new alternatives – thus, the decision process is faster. Likewise, concerning the effects of induced negative emotions, researchers have revealed that people experiencing negative emotions perceive (in general) uncertainty in a more pessimistic way, considering that their probability to win is lower (Cunningham, 1988). On the effects of induced positive emotions, the research also states a discrepancy between the results. Isen, Daubman and Nowicki (1987) assert that people who are experiencing positive emotions use a more simplified processing style, the decision-making process being faster. Mackie and Worth (1991) have found that positive emotions lead to superficial thinking and poor judgment, because positive emotions transmit the idea that the environment is safe. In these conditions, people tend to reduce the motivation to scrutinize data. Nevertheless, Isen (2000, 2001) mentions that positive emotions facilitate careful processing, leading to more efficient decision. The author has established that positive emotions promote efficiency and the decision-making process is faster. Also, about the effects of induced positive emotions, it has been found that happiness facilitates helping and generosity to others. Yet, if helping someone will destroy people’s own positive emotional states, the participants (with induced positive emotions) seem to help less than subjects from the “control group” (Isen & Simmonds, 1978). Regarding the observed differences between the effects of positive and negative emotions, we must say that investigations differ in terms of emotion induction procedure and emotion manipulation check. As stated by Gerrards-Hesse, Spies and Hesse (1994), there are various methods for emotion induction, for example: mental imagery recall of different experiences, reading emotionally-loaded sentences, presenting movies, pictures or music.

The purpose of our study was to examine the effects of induced positive and negative emotions (fear and sadness) on working memory, creativity, repetition speed and precision.

Materials and methods

Participants

A total number of 38 male athletes aged between 20 and 22 years, practicing football and martial arts (karate and taekwondo), participated in the research. Their training/competitive experience is comprised between 7 and 12 years. The male athletes were divided into four groups that played the role of independent variable: “positive group” (positive emotions were induced), “negative-fear group” (fear was induced), “negative sadness group” (sadness was induced) and “control group” (no emotions were induced). The participants (students at the National University of Physical Education and Sports of Bucharest) were randomly assigned to the four groups, with 10, respectively 8 athletes in each condition (in the case of the “control group”, there were 8 participants). Each group includes an equal number of athletes practicing football and martial arts.

Devices and materials

The devices and instruments used in the research were: the computer and the projector (only fulfilled the role of support for generating positive and negative emotions); the emotion induction procedure (we used the Geneva affective picture database - GAPED); the emotion manipulation check (to verify if the desired emotions were
successfully induced - the athletes indicated how they felt marking on a scale from 1 to 10, where 1 means displeasure/non-arousal and 10 means pleasure/arousal, before and after the emotion induction procedure; tests: Working Memory test (within CAS* tests developed by Cognitrom), Creativity test (adapted after Torrance et al., Roco, 2004, p. 206), “Tapping” test from the Mac-Quarrie aptitude battery and SPSS 20 for statistical processing of data.

The Geneva affective picture database (GAPED) represents a relatively new and large affective multimedia database with 730 pictures. This database was created by researchers at the Swiss National Center of Competence in Research “Affective Sciences - Emotions in Individual Behavior and Social Processes” and can be downloaded from www.affective-sciences.org/researchmaterial. Pictures are stored in six separate folders, each referring to one semantic category: “positive”, “neutral”, “spiders”, “snakes”, “human concerns” and “animal mistreatments”. Each category contains over 100 images, four of them being emotionally negative (Dan-Glauser & Scherer, 2001). Pictures of snakes and spiders were selected after a review of scientific libraries. Thus, more than 300 studies have dealt with snake and/or spider phobia, such stimuli being considered of high relevance because of their evolutionary threat-related content (Öhman & Mineka, 2001). Pictures regarding “human concerns” and “animal mistreatments” were selected based on the idea that for stable communities, for the socially organized species, behavior and rule violation is regarded as important and has a strong potential to generate an emotional response (Scherer, 1987). Therefore, the images contained by GAPED suppose low compatibility with social and personal norms. When people evaluate pictures that contradict social/personal norms, they are experiencing sadness, pity, guilt (Sander, Grandjean, & Scherer, 2005). The positive category of GAPED contains images about nature, landscapes and representing human babies and young animals. Regarding neutral images, the pictures represent objects, as well as buildings and furniture (we acknowledge that our research does not address the neutral images).

The “Tapping” test, part of Mac-Quarrie aptitude battery, consists of 70 circles (ten small circles per row). The task of the participant is to make three points in every circle as quickly as possible. The test lasts 10 seconds and requires repetition speed and precision. Two or four points in a circle can be translated into a lower final score.

The Working Memory test (within CAS* tests) is structured in seven series with five rows for each series. Every row/item contains numbers and letters (there can be numbers from 1 to 9 and letters from A to O). On every row, the numbers and letters alternate, every number being followed by a letter and the opposite. The elements (numbers and letters) which form a series are growing constantly. Thus, the first series contains 3 elements (five rows/items of three elements) - two numbers and one letter/one number and two letters, the second series contains 4 elements (two numbers and two letters), while the last series (the seventh) contains 9 elements (five numbers and four letters/four numbers and five letters). After the examiner is reading a row (for example, with 5 elements), the participant is required to reproduce from memory and write all the elements – first the numbers in ascending order and then the letters in alphabetic order. The Working Memory test evaluates the storage capacity and simultaneous information processing.

The Creativity test consisted in performing three tasks. Thus, the athletes were asked to identify the similarities between two objects, to identify what a figure may represent and to mention as many unusual uses of an object. The investigated participants were told that they could respond through any ideas that they considered appropriate. The total response time was 3 minutes (one minute per task). We scored fluency, as a major component of creativity, by the total number of generated responses.

Procedure

The study was conducted with groups of 4-18 people at a time, but only data from the participants practicing football and martial arts were included in the study (we mention that in the experiment room there were 2-6 athletes belonging to the target-group). The three tests used in the experiment, Tapping test, Working Memory test and Creativity test, were carried out by the athletes on the same day, before and immediately after the emotion induction procedure. In order to induce positive and negative emotions (fear and sadness), the Geneva affective picture database (GAPED) was used. The three different tests that assess cognitive and psychomotor abilities were applied every time in the same order, as mentioned above. To solve the three tests (Tapping, Working Memory and Creativity) generally takes about 5 minutes. The Tapping test lasted 10 seconds, the Working Memory test lasted about 2 minutes and the Creativity test lasted 3 minutes. We mention that, from the whole Working Memory test, only eight items were used in the experiment – four items were used at the beginning of the study and another four items after the emotion induction
procedure. The items selected were similar, in terms of difficulty, with 5, 6, 7 and 8 elements - numbers and letters (items contained the same proportion of numbers and letters before and after the emotions were induced). In the case of the Creativity test, the participants had 1 minute for each task: to identify the similarities between two objects, to identify what a figure may represent and to mention as many unusual uses of an object. Likewise, the items selected to be used before and after the contact with the emotionally charged stimuli were similar, in terms of difficulty. The athletes were evaluated in a resting state (without previously practicing any physical exercise) and without previous exposure to emotional stimuli, being in a neutral emotional state (we refer to the beginning of the experiment, before the emotion induction procedure occurred). Regarding the Geneva affective picture database (GAPED), a number of 120 pictures were used for each group, in order to induce positive and negative emotions. In our approach, we used a regular computer screen and a projector. In the case of the “positive group” (positive emotions were induced), the 120 pictures consisted of nature sceneries, as well as human and animal babies. For the “negative-fear group” (fear was induced), the visual stimuli were represented by spiders and snakes, while for the “negative-sadness group” (sadness was induced), the 120 images consisted of scenes involving violation of moral and legal norms (animal mistreatment and human rights violation). A stimulus was presented every 5 seconds and the whole emotion induction procedure (for each group) lasted about 10 minutes. The participants were told that they could choose to stop the experiment at any time (no athlete decided to stop the study). In the case of the “control group”, the participants did not carry out the emotion induction procedure, but went straight into the test situations. Specialized literature on emotion induction (Westermann et al., 1996) has suggested that an average of 15 minutes is enough to successfully allow the desired emotions to occur. In our research, as we mentioned above, the emotion induction procedure lasted 10 minutes. It has been found (Lerner & Tetlock, 1999) that the effects of induced positive and negative emotions may last up to half an hour (in our study, solving the three tests, Tapping, Working Memory and Creativity, lasted about 5 minutes). As the authors highlighted, the positive and negative emotions, despite the short-lived nature, can influence subsequent cognitive functions.

To verify if the positive and negative emotions were successfully induced, the participants indicated how they felt giving a mark from 1 to 10, where 1 means displeasure/non-arousal and 10 means pleasure/arousal, before (having a neutral emotional state) and after the emotion induction procedure. The results were compared to the values for valence and arousal mentioned by Estupinan et al. (2014). Thus, the authors, regarding the images from GAPED, infer clear numerical variations: positive images have lower arousal values and greater valence values, compared to neutral (when the subjects experience a neutral emotional state); negative images have higher arousal values and lower valence values, compared to neutral (when the participant is having a neutral emotional state). For each participant, in order to verify if the emotion induction procedure was efficient, we compared the values for valence and arousal in both conditions - before (using observation and conversation as research methods, we considered that the athletes were experiencing a neutral emotional state) and after the emotion induction procedure, with the values for valence and arousal related to the images from GAPED. Thus, in the case of the “positive group” (positive emotions were induced), only the athletes who reported (at the end of the emotion induction procedure) lower arousal values and greater valence values, compared to the values reported at the beginning of the experiment, were accepted in the study. Also, regarding the “negative group” (negative emotions were induced), only the athletes who reported (at the end of the emotion induction procedure) higher arousal values and lower valence values, compared to the values reported at the beginning of the study, were included in the research.

The results registered by the athletes for Tapping, Working Memory and Creativity tests, after the emotion induction procedure, were compared to the results obtained before the positive and negative emotions (fear and sadness) were induced.

Results

The investigation of box-plot charts (in the preliminary data analysis) revealed that, in the case of scores registered by the athletes for Tapping, Working Memory and Creativity tests, there were no extreme values (outliers).

Using the Wilcoxon test for two related samples (a nonparametric test), we verified if there were significant differences between the performance obtained for repetition speed and precision, working memory and creativity, after the emotion induction procedure, and the results registered by the athletes in the beginning of the experiment. The conditions for applying the Wilcoxon test are fulfilled (Labir, 2008, p. 136): the dependent variables are ordinal,
quantitative, and the samples have a small volume (10 participants for each group, except the control group which consists of 8 participants).

Table 1. Results for Tapping, Working Memory and Creativity tests – before and after the emotion induction procedure

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<th>Mean</th>
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<tr>
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<td>repetition speed and precision</td>
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<td>creativity – fluency</td>
<td>before</td>
<td>10.30</td>
<td>2.669</td>
<td>-2.414</td>
<td>.016</td>
</tr>
<tr>
<td></td>
<td>after</td>
<td>8.90</td>
<td>3.604</td>
<td>-2.414</td>
<td>.016</td>
</tr>
</tbody>
</table>

a. Based on negative ranks.
b. Based on positive ranks.

The results from Table 1 underline:

- In the case of the “positive group”, there are significant differences (p < .05) between the results for repetition speed and precision, working memory and creativity (fluency), obtained after the positive emotions were induced (Median = 18, Median = 25, respectively Median = 15.5), and the results registered at the beginning of the experiment (Median = 15, Median = 23.5, respectively Median = 13).

  The effect size index is r = 0.56, r = 0.64, respectively r = 0.60, which shows a strong effect of the emotion induction procedure on the performance obtained by the athletes for repetition speed and precision, working memory and creativity.

- Regarding the “negative-fear group”, there are significant differences (p < .05) only between the results for repetition speed and precision, registered after fear was induced (Median = 15), and the scores obtained at the beginning of the study (Median = 12.5).

  The effect size index is r = 0.59, highlighting a strong effect of the emotion induction procedure on the performance obtained by the participants for repetition speed and precision.
Discussions and conclusions

This research demonstrates the presence of several significant differences between the results for repetition speed and precision, working memory and creativity (fluency), obtained after the emotion induction procedure, and the results registered by the athletes in the early phases of the experiment (before the positive or negative emotions were induced). Although this is a pilot study, it is possible to draw some conclusions. In the case of the “positive group”, the athletes practicing football and martial arts (karate and taekwondo) obtained, after the positive emotions were induced, better performances for all three investigated dimensions. Thus, they registered better repetition speed and precision, showed better capacity for data storage and processing and provided significantly more ideas, compared to the beginning of the study. In 1999, Lee and Sternthal have found out that mood affects the strategies used by a person to process information. The authors highlight that positive emotions enhance the learning of brand names (we can observe the effect of positive emotions on memory), compared with a neutral mood. Other researchers (Bless et al., 1996) argue that positive emotions offer better access to existing mental structures. Also, Lewinsohn and Mano (1993) have specified that a person who is experiencing positive emotions tends to use more information from those available (this evidence can explain the impact of positive emotions on working memory, creativity, repetition speed and precision in the sports domain). Regarding the “negative-fear group”, after fear was induced, athletes practicing football and martial arts obtained better performances only for repetition speed and precision. In the case of working memory and fluency (a major component of creativity), at the end of the emotion induction procedure, the athletes did not register significantly better or worse results. In other words, induced fear did not influence (in a statistically significant way) the ability to store and process data or the capacity to generate ideas. It is known (Lerner & Keltner, 2000) that fear contributes to pessimistic judgments and the future events are perceived with more doubt. At a careful analysis (see Table 1), our study suggests that fear (and the doubt felt) leads to an increase (but not in a statistically significant way), especially in the case of working memory. With respect to the “negative-sadness group”, the athletes obtained better performances for repetition speed and precision and significantly worse results in the case of working memory and creativity (fluency). Thus, after sadness was induced, the football players and martial artists manifested faster and precise movements, but, at the same time, the capacity to store information and process data, and also the ability to produce ideas, were affected. Mano (1994) has shown that people who are experiencing negative emotional states form more polarized judgments and use simpler decision strategies. These findings are linked with ours, the athletes who were induced sadness proving weaker cognitive capacities. Considering the practical implications of this research, a real-life application can be: “Don’t play when you are sad”.

At a close overview, we find that repetition speed and precision have been significantly improved, whatever negative emotions were induced to the athletes (fear or sadness). We can explain this fact in a certain context. We know that arousal, felt at a moderate intensity, accompanies increased performances (Tenenbaum & Eklund, 2007, p. 38). In our study, induced negative emotions (fear and sadness) using GAPED have determined an increase of arousal - this means that the athletes from “negative-fear group” and those from “negative-sadness group” felt arousal at a relative moderate intensity (a level that facilitates performance; as Kaufman stated in 1999, too little or too much emotional arousal will decrease performance). We must say that different authors (Estupinan et al., 2014) used virtual reality (VR) to verify the effects of induced emotions (authors used, in VR, images from GAPED). They have found that the use of VR (supposing a Head Mounted Display) generates an increase of arousal and stronger emotions, compared to a regular desktop computer (as we used in our study). The high levels of arousal, especially for the negative images from GAPED, can be explained by the fact that VR is a tool that allows participants to be unaware of
their surroundings. In these conditions, we are sure that, in our research (we used a regular computer screen and a projector), athletes felt arousal in a different way, compared to virtual reality (VR) or to real-life situations. Thus, we expect that in a real-life situation, when athletes will experience fear or sadness, the effects on repetition speed and precision, working memory and creativity to be (more or less) different from those highlighted in our study. Our research findings represent a starting point in understanding the effects of different emotions on the cognitive and psychomotor levels, in the case of athletes.

The limits of our research are represented by the gender, cultural differences or individual sensitivity. The results might be different if only female athletes were investigated, if the study was made in another country or on athletes practicing different sports. We also mention, as a limit of our research, the day and the moment of the day when the participants were tested - the athletes were studied from Monday to Friday, some of the participants were tested in the morning and some in the afternoon. Further studies are required to clarify the effects of positive and negative emotions (in real-life contexts), not only on repetition speed and precision, working memory and creativity (fluency), but also on strength and endurance (as conditional capacities), balance, spatial orientation, intersegmental and eye-hand coordination (as coordinative capacities) and, why not, on personality (anxiety, aggression, autonomy, conscientiousness or self-confidence).

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ANALYSIS OF WOMEN’S NATIONAL HANDBALL CHAMPIONSHIP, PREMIER LEAGUE, IN GREECE

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Abstract. The national championship of any country, whatever the sport, can be analyzed from many points of view. In this article, we propose the analysis of the Greek handball championship, first league, in terms of competitive balance. This type of analysis is useful for knowing the value of the domestic championship and being able to take certain steps towards its spectacular growth. Analyzing other championships, it has been observed that the number of spectators increases when the matches are balanced. Competitive balance gives access for these competitions to the broadcasting of the games, which raises new financing sources for the teams involved in the championship. We can say that the internal contest is totally unbalanced, which hinders the existence of spectators and decreases the interest in broadcasting it, and this leads to low financing of the participating teams.

Keywords: handball, women’s championship, competitive balance.

Introduction

Analysis of North American professional sports activity represented the debut of this type of analysis. This was due to the fact that professional sport has a major impact on the economic aspects of deployment of competitive activity (Buzzacchi, Szymanski, & Valletti, 2003). A very disputed championship attracts around it a large number of financial resources from television rights, advertising, etc. (Groot, 2005).

Research conducted on different football championships in Europe have concluded that the existence of a perfect team that manages to defeat all opponents many years causes a decrease in the public interest for that competition. As a result, we can say that a championship is even more interesting as the fight for victory goes across workgroups and extends as far as by the end of the championship, and the winner of the competition emerges as late as possible, eventually just in the last stage (Groot & Groot, 2003).

How balanced is the championship of handball in Greece? Is there competitive balance in Greece? How do we maintain public attention to domestic competition? Is it the case to be concerned?

Competitive balance is manifested at two levels (Hantău et al., 2013: 345):

- At the level of a game: the attractiveness of the game remains high if the outcome remains undecided until the end of the game;
- At the level of a championship: competitive balance does not allow a team or group of teams breaking away from the rest of the platoon in the early stages of the competition, and the fight for the title is given until the last stage, the point difference between the champion and the last positioned team being minimal.

Ideally speaking, a season is balanced when each team wins half of the games of a season and loses the other half, or all games in a season will end in a draw. As a result, in both cases, all teams will have the same number of points at the end of the season. But such a thing is not possible.

Working methods

The main method used in this research work is statistical and mathematical analysis. Among the statistical and mathematical indicators used, we mention: the percentage of wins, the amplitude, the coefficient of variation of the percentage of wins and NAMSI coefficient (Goossens, 2006).

The percentage of wins counts the victories and the draws in a season for a team. For every victory, 1 point is awarded, for each draw, 0.5 points. Then, the gathered points are divided by the number of games to get the percentage of wins of a team in a season. The result will have a value varying between 0 and 1. As interpretation, the closer the value to 1, the higher is the number of wins for a team in a season. The percentage of wins is a very important factor because, by using it, there will be calculated all the coefficients according to which the analysis of the championship will be made.
The amplitude is the most readily available measure of competitive balance, being the difference between the percentages of wins between the first and last team. The greater the difference, the less competitive the balance is.

The coefficient of variation of the percentage of wins is a measure of relative dispersion, as opposed to the standard deviation, which is an absolute measure. The coefficient of variation (CV) represents the approximate percentage ratio of the standard deviation and arithmetic mean, and the calculation formula is:

\[
CV = \frac{S}{M} \times 100 \quad (1)
\]

CV - coefficient of variation;
S - standard deviation of the percentage of wins in a season;
M - average percentage of wins in a season.

This percentage expression allows us comparing various competitive seasons. The CV is smaller, then the data analyzed are more homogeneous. As a result, by this coefficient, we can analyze and compare the homogeneity of various competitive seasons.

As a CV rating scale, we can use the following values:
- High homogeneity: CV < 15%
- Moderate homogeneity: 15% < CV < 25%
- Low homogeneity 25% < CV < 35%
- Lack of homogeneity: 35% < CV

NAMSI coefficient

To compare the games won over several seasons, it is necessary to adapt a way to measure validly in all cases, because the number of teams from different competitive seasons is different. To clarify this, we give the following example. Let us assume that the worst scenario occurs in the following situation: a team wins every game, the second team wins every game except those against the first team, the third team wins all the games except those against the top two teams, etc. As a result, the standard deviation of the percentage of games won in such a competition with 18 teams will be 0.305148. Let us suppose that it will be decided to increase the number of teams for next season to 20, and the script is kept. In this case, the standard deviation of the percentage of wins becomes 0.303488.

So, by adding two teams, the measure of uncertainty decreases, which gives us the impression that it has been improved. This is not correct, because we still know who will win. As a result, the worst scenario is that it can predict who will win a game. Therefore, for a correct comparison of different competitive seasons, we propose NAMSI coefficient.

\[
NAMSI = \frac{sd_{max} - sd_{min}}{sd_{max} - sd_{min}} = \frac{\sum_{i=1}^{n} (w_i - 0.5)^2}{\sum_{i=1}^{n} w_{\text{dom}} - 0.5)^2} = \sqrt{\sum_{i=1}^{n} (w_{\text{pred}} - 0.5)^2} \sum_{i=1}^{n} (w_{\text{dom}} - 0.5)^2 (2)
\]

i = team;
n = no. of teams;
w_i = percentage of wins and dominating them
w_{\text{dom}} = percentage of team wins and predictable wins.

As interpretation, if the NAMSI coefficient value is closer to 1, that championship is unbalanced.

Results

Tables 1, 2 and 3 show the number of teams participating in the national championship of Greece, the coefficient of variation of the percentage of wins, the amplitude coefficient for each competitive season and NAMSI coefficient within the period 2001-2016, for a total of 15 competitive seasons.

Table 1. Mathematical and statistical indices calculated for the competitive seasons 2001-2006

<table>
<thead>
<tr>
<th>Years</th>
<th>01 - 02</th>
<th>02 - 03</th>
<th>03 – 04</th>
<th>04 - 05</th>
<th>05 - 06</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2. Mathematical and statistical indices calculated for the competitive seasons 2006-2011

<table>
<thead>
<tr>
<th>Years</th>
<th>06 - 07</th>
<th>07 - 08</th>
<th>08 - 09</th>
<th>09 - 10</th>
<th>10 - 11</th>
</tr>
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<tbody>
<tr>
<td>Number of teams</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Coefficient of variation</td>
<td>61.16</td>
<td>58.83</td>
<td>62.17</td>
<td>65.38</td>
<td>63.42</td>
</tr>
<tr>
<td>Amplitude</td>
<td>0.92</td>
<td>1</td>
<td>0.91</td>
<td>0.98</td>
<td>0.98</td>
</tr>
<tr>
<td>NAMSI coefficient</td>
<td>0.900</td>
<td>0.874</td>
<td>0.923</td>
<td>0.962</td>
<td>0.942</td>
</tr>
</tbody>
</table>

Table 3. Mathematical and statistical indices calculated for the competitive seasons 2011-2016

<table>
<thead>
<tr>
<th>Years</th>
<th>11 - 12</th>
<th>12 – 13</th>
<th>13 - 14</th>
<th>14 - 15</th>
<th>15 - 16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of teams</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Coefficient of variation</td>
<td>66.11</td>
<td>75.96</td>
<td>60.69</td>
<td>62.92</td>
<td>71.56</td>
</tr>
<tr>
<td>Amplitude</td>
<td>0.833</td>
<td>0.857</td>
<td>0.834</td>
<td>0.786</td>
<td>0.958</td>
</tr>
<tr>
<td>NAMSI coefficient</td>
<td>0.923</td>
<td>0.962</td>
<td>0.896</td>
<td>0.874</td>
<td>0.976</td>
</tr>
</tbody>
</table>

Fig. 1. NAMSI coefficient for the competitive seasons 2001-2006
Fig. 2. NAMSI coefficient for the competitive seasons 2006-2011

Fig. 3. NAMSI coefficient for the competitive seasons 2011-2016

Conclusions

Analyzing the results obtained by calculating various mathematical and statistical indicators, we can get an idea about the balance of the Greek handball championship.

1. From the point of view of the coefficient of variance, we note that the values calculated for it varies between 58.83% (the lowest) and 75.96% (the highest value); comparing these values with the assessment scale, we can say that the values obtained show a total lack of homogeneity.

2. In terms of amplitude of the percentage of wins, we note that it varies between 0.786 (the lowest) and 1 (the highest value); this shows that the differences between the first and the last positioned teams are ranked very high, which underlines once again the total imbalance of internal competition;

3. From the point of view of the NAMSI coefficient, we see that they vary between 0.874 (the lowest) and 0.992 (the highest value); as the values of this coefficient are closer to 1, the championship is much unbalanced.

Analyzing further the national championship, we can say that the period elapsed after 2011, a period coinciding with the economic problems, is reflected in the conduct of the championship. The number of teams decreased from 10 to 8, many teams disappeared and some teams did not manage to finish the championship.
From another point of view, it is to note that there were some teams who managed to win more championships during this period (Artas - 6, Nea Ionia - 3), but there were teams that had one or two participations in a championship, after which they disappeared. This is explained by the financial imbalance of certain teams and the concentration of the most valuable players only on certain teams.

As a final conclusion, we can say that the internal contest is totally unbalanced, which hinders the existence of spectators and decreases the interest in broadcasting it, and this leads to low financing of the participating teams.

References


THE CONTRIBUTION OF PLAY FIGHTING TO THE DEVELOPMENT OF FIGHTING SKILLS

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Abstract. Evolutionary theory and subsequent developments are founded on the assumption that the organism adapts and evolves through natural selection, under environmental and social pressure. These adaptations are meant to answer vital problems for the survival of the individual and the species. In the last few years, numerous research attempts on different species of mammals have tried to make evident the “survival value” or the adaptive value of play fighting. It represents a form of behavior in which the partners compete with each other to obtain an advantage. The behavior during play fighting is very similar to real fight, in which the partners hit, push and bring each other to the ground in an attempt to arrive at a position in which they can control or dominate their opponent. In play, as opposed to fighting, movements are exaggerated and made at a lower intensity, muscles are less tensed, certain actions that may cause injury to the partner are inhibited or modified, and the offensive-defensive are frequently inverted. The prevalence of play fighting in a period that precedes sexual maturation and its similarity with real fighting makes this form of play to be seen as practice for the formation of skills necessary in maturity. Play fighting offers the opportunity to learn about fighting, bring reciprocity in social relationships, contribute to the development of problem solving abilities and, above all, will facilitate the adoption of a behavior adapted to the situational context.

Keywords: adaptive value, play fighting, fighting skills, reciprocity.

Introduction

In evolutionary approaches, human or non-human behavior can be fully understood only in relation to (a) the mechanism that explains the means of the ontogenetic development of behavior and (b) the adaptive value of behavior and the contribution of these adaptations to increasing inclusive fitness (Tinbergen, 1963; Burghardt, 2005). The first part provides an explanation of how these traits or behaviors create a certain effect, and the second explains why these behaviors have been favored during the course of evolution (Confer et al., 2010; Scott-Phillips, Dickins, & West, 2011). The adaptive value of behavior or “survival value”, as it was called by Tinbergen (1963), concerns the contribution to increasing the chances of survival and reproduction. As shown by the author, some animals have a number of behaviors that are quite hard to understand. Many of the characteristics of these animals are adaptations that help them camouflage in the native environment, and these motions will be adapted to the function of avoiding being caught by predators that must be stimulated by movement in order to detect and track prey (Tinbergen, 1963). The adaptive value of behavior will be derived from the consequences that arise from these manifestations or from the effects produced by the deprivation of experiences that make these changes possible, but it is not always obvious which functions these behaviors serve.

In recent years, there have been many studies on different species of mammals, which tried to highlight the functions of play fighting and their role in development. In the case of our species, these manifestations of play fighting have been largely neglected (Pellegrini & Smith, 1998), although this form of play qualifies best to study behavioral genetic predispositions (Smith, 2010; Burghardt, 2005). On the other hand, play fighting shows the greatest similarity in behavior between humans and other species, especially primates (Aldis, 1975; Burghardt, 2005). The findings related to the functions that play fighting performs and the effects of deprivation in animals can bring some clarification necessary to understand the importance of play fighting for normal development in childhood and the consequences of educational policies of deterrence manifested significantly in recent years, which otherwise we cannot determine.

Play fighting as practice for fighting skills necessary in maturity

Animal studies show that play fighting may appear quite early in the juvenile period (Burghardt, 2005; Smith, 2010), and the movements and actions used in the play structure tend increasingly to resemble those used in actual combat (Power, 2000; Pellis & Bell, 2011). In addition, the profile of physiological reaction (in terms of endocrine secretions) for the duration of play fighting seems to approach the reaction profile during real fights with sexual maturation (Pellis, Pellis, & Foroud, 2005; Hurst et al., 1996). Prevalence of play fighting in a period that precedes
sexual maturation and high similarity with the behavior of real fight makes this kind of play to be seen as practice for the acquirement of skills needed in fight. Indeed, it is quite plausible that the play has been selected to serve certain functions to develop skills needed in adulthood, especially for situations where a direct practice of these skills in real conditions may be difficult or even dangerous (Smith, 2010). In this way, individuals can simulate relative safety under certain situations they may face later in life and learn behaviors that are either complex or involving a high degree of risk, such as catching prey or fighting with peers. Such behaviors are more pronounced in cats and other predators, while behaviors considered safe, for instance behaviors involving caring, will not have correspondents in play (Bateson, 2005).

Baerends-van Roon and Baerends (1979) observed that when kittens reach the age of four weeks, the mother cat brings trapped prey to the shelter and offers it to them. Some of the more curious kittens approach to sniff it, and if the prey is still alive, they start pursuing it. During the pursuit, prey may try to defend itself, which will determine the kittens to retreat, and this can be repeated until one of the kittens catches and kills the prey, or eventually the prey will be killed by the mother cat. The first attempts to catch and kill a mouse can vary considerably between different kittens, but this variability is reduced after several mice have become trapped, when this behavior becomes a stereotype. According to the authors, the specific behavior of capture and killing is done in complete form only after the cat undergoes a shorter or longer practice achieved largely through play, which suggests the need for a certain period of learning time for this to occur.

On the other hand, the results of several studies performed on different mammals reveal that animals deprived of play situations show relatively normal mature predatory skills (Bateson, 2005; Pellis & Pellis, 2006). Caro (1988) conducted a study to compare the ability of predators of cats reared in conditions offering different opportunities to play. At maturity, regardless of the conditions to which they were exposed, whether they were reared with siblings, whether they grew up in an environment rich in opportunities to play with objects, cats will show no notable differences in predatory skills (Caro, 1988; Pellis & Pellis, 2006). Hill and Bekoff (quoted by Pellis & Pellis, 2006) find that coyote pups that come from different births may present significant differences in the play activity, which does not translate into higher predatory skills. Similarly, Sharpe (quoted by Smith, 2010; Graham & Burghardt, 2010) notes that, in wild Meerkats (Suricata suricatta), a high rate of success in play fighting is not related to the ability to win fight in adulthood.

Pellis and Pellis (1998) consider that before one can validate or refute the hypothesis that play fighting has been selected to serve for acquiring the necessary skills in fight, it would be useful to see to what extent the structure of actions during play corresponds to the design of those encountered in real fight. Following research conducted on several species of mammals, it has been found that there are notable differences in the specific pattern of behavior, which is not due strictly to constitutional peculiarities, such as body shape or handling (Pellis & Pellis, 1998; Pellis & Iwaniuk, 2004; Power, 2000). The differences found in the behavioral pattern during play fighting in different species refer to the target of attacks and the organization of offensive and defensive actions. Data collected in many studies conducted on rodents can be especially informative in revealing this picture of events. In play fighting in rodent species, offensive manifestations are directed toward targets derived from the agonistic and pre-copulatory behavior, and the distribution of these events can be quite diverse. For example, in the Richardson ground squirrel (Spermophilus richardsonii), about 80% of these play events have a sexual character, while in the California ground squirrel (Spermophilus beechyii), the same 80% of the celebrations will be of an agonistic character (Pellis & Iwaniuk, 2004; Burghardt, 2005).

Pellis and collaborators (1997, 1998, 2009) made a thorough analysis of the behavior of several species of mammals conducted in rounds of fight and play, in which it is expected that the actual fighting behavior will present a high similarity to that seen in play fighting. The motor pattern during play should be suitable for the purpose for which it is used in actual combat, and tactical aspects that are more difficult to put into practice should receive attention. According to the authors, data resulting from structural analysis of the play suggests that these expectations are rarely met.

For many rodents, targets of attack and defense during play fighting are the same as the pre-copulatory behavior, and not those of agonistic behavior. When play fighting occurs between a male and a female, these events will present predominantly sexual characteristics, which make them less suitable for combat, even though after sexual maturation the play can become somewhat rougher. Similarly, during play fighting, juveniles of both sexes compete for access to
each other’s throat or nose, and if they get in contact, they are licked and rubbed. However, contact during actual battles involves biting partner mainly on the lower flanks, on their dorsal side (Pellis & Pellis, 1998).

In the adult, whether in the form of real or play fighting, contextual behavior execution requires a certain level of performance in some maneuvers, through which it is aimed to obtain an advantage by one of the opponents and others used by the defender to block the attainment of that advantage. In real fight, the attacker oscillates between the need to attack to get the desired benefit or to defend against a potential counterattack of the opponent, and the defender will try to counter every move of the opponent. In contrast, during play fighting, the attacker does not seek to defend themselves against the responses of the opponent, and the defender will not block all actions of the attacker vigorously. Tactical actions involving the simultaneous use of offensive and defensive maneuvers are rarely used in the play, and when this mode of action occurs, it will most likely be used by the defender and not the attacker.

In the play, unlike during real fighting, the rats do not fight to win. The behavior of rats during play fighting will rather be oriented to ensure a certain level of reciprocity, which, on the one hand, will be designed to facilitate play (Bekoff, 2002; Pellis & Pellis, 2011), and on the other hand, to reduce the risk of play degenerating into real aggression. Self-handicapping occurs when an individual performs a pattern of behavior that may compromise the effect of their actions. For example, in the course of the play, an animal may choose not to bite the partner or to greatly reduce the force of the bite. Role reversal occurs when an animal performs an action in the play that normally would not occur during real fight. Role reversal can occur during actual fighting, but it occurs due to the superiority of one opponent. (Pellis & Pellis, 1998; Pellis & Bell, 2011). Pellis and Pellis (1998: 132) suggest that if this practice for real fights occurs during the play fighting of rats, “it is most likely to be for defense, not attack”.

In other species of rodents and monkeys, play fighting may have a higher similarity with real fighting, which can make them more suitable for preparation for battle. This is most obvious in degu squirrels (Octodon degus), a rodent native to Chile. Degu squirrels leave the impression that they are “fighting to win” the rounds of play in which they participate. Tompson (1998) notes that when degu pups engage in the play, they behave so as to maximize the probability of winning by using any positional advantage created to unbalance the opponent and project them backwards with their backs onto the ground. Pellis, Pellis and Reinhart (2010) analyze the behavior of the degu squirrel in play situations and real fighting. In both cases, the degu will rise on two legs and then hit each other, pushing with the front paws in order to create the conditions to push the opponent with the hind legs. A successful startup requires separation with both feet on the ground, with body rotation around the longitudinal axis to allow the performer to land on all fours, and contact with opponent will be on the front of the body and must be strong enough to unbalance and project him backwards.

In real fight, this maneuver will be used in 80% of cases where one of the opponents manages to inflict a bite on the other’s shoulder or side of the body. After landing, the one who has performed the attack usually finds itself with the rump facing the opponent, and to be able to bite the opponent, it must return quickly before the opponent can recover from the fall. The animal receiving the blow tries to return to its feet rapidly in order to prevent being bitten, or to bite its opponent. The report will be successful bites 70%: 30% in favor of the animal executing the striking maneuver.

In play fighting, it is very rare for one partner to bite its co-combatant, and when it happens, the bite force will be relatively low and most likely will serve to end the interaction. The same cannot be said about the striking maneuver that will be carried out as in the actual fight, but after the capture, none of the combatants will try to exploit the advantage created. In most cases, after a successful striking maneuver, the play continues either with some conciliatory behavior or agonistic behavior resumes. Sometimes, after the performer returns on all fours, it turns sideways or obliquely to the partner, turns its head slightly to one side, partially closes its eyes and remains immobile. Meanwhile, the animal hit recovers, goes toward its immobile partner and pushes or rubs its nose against the shoulder, neck and face, being exposed to the partner. Thus, unlike the real fight, in play fighting these rodents will not take advantage of the favorable situation created after a successful offensive action, and the animal in defense will not try to offset the advantage obtained by the opponent (Pellis, Pellis, & Reinhart, 2010).

Pellis and Pellis (2011) found, in studies of porcine species, a third way of restricting the behavior. In the play fighting, like degu species, pigs do not show restrictions in the fighting behavior, but unlike the degu squirrels, they do not abstain themselves from exploiting the advantage created. Thus, to stop future attacks, the animal that was in a disadvantage must either flee or adopt a submissive position by lying down on the ground. Through this submissive
behavior, the animal found at a disadvantage will ask its partner to refrain from aggressive behavior. Through metalanguage, this animal will appeal to the opponent’s fair-play.

Pellis and collaborators (2010, 2011) believe that to maintain the play interaction and possibly to prevent escalation into a conflict, it is necessary for the animal that has obtained an advantage to not take this opportunity and enable its partner to recover, and this in turn will not exploit the self-handicap assumed by the opponent. Such moments create perfect conditions for the emergence and consolidation of those manifestations of mutual reciprocity (Pellis et al., 2010).

Pellis and collaborators (1998, 2010) are tempted to conclude that, through the limitation of actions in defense and attack, play fighting is a “weak vehicle” for practicing skills needed in real fight, but play fighting will have a contribution to the development of mechanisms regulating social behavior. However, the hypothesis that play fighting is considered a necessary practical skill in fight receives additional support by the fact that male offspring have a greater appetite and will often engage in such rounds of play (Björklund & Pellegrini, 2000), and in the spotted hyena, a species in which adult females are larger and more aggressive than adult males, it can be held to a higher level of engagement in play fighting for female offspring (Drea, Hawk, & Glickman, 1996; Power, 2000).

Play fighting may present noticeable behavioral differences both between species and in different periods of development. The main differences that occur over time are found especially in defense strategy. The development of play fighting, at least in rats, shows that the strategy adopted by combatants during juvenile period is designed to facilitate the play. During this period, the main defense strategy will be to adopt a submissive posture that will allow the partners above to set the opponent with the back on the ground. In return, the partner above, instead of remaining with the hind legs propped on the ground, which would allow it to move the trunk and forelegs to restrict or counteract movements of the partner, will prefer to rest with all limbs on partner’s body. This behavior is even more unusual since this position is difficult to maintain even without the underlying partner trying to escape, and thus the rat positioned above is purposely acting as to facilitate the partner’s counter. Subsequently, with the onset of puberty, male rats will prefer to remain standing as a main tactics, which is a defensive strategy closer to the strategy used in actual combat, while females will keep the defense supine position. Movements and strategies used during play seem to be getting closer to the fighting as the discrepancy between partners will be lower and the interactions between partners can take a rougher form, sometimes switching to real fight. Matching between partners provide optimal conditions to practice and build strategies in a more efficient way (Palagi, Antonacci, & Cordoni, 2007). In species where intra-specific competition is higher, there is an increase in the frequency of rounds played, which are becoming more competitive, by which young individuals will test their strength or fighting skills (Palagi, Antonacci, & Cordoni, 2007; Palagi & Cordoni, 2012), in a context that allows them to return to a more conciliatory conduct (Pellis & Pellis, 2011).

The emergence of relations of domination will lead to a complication of interactions between peers and thus will produce adaptations in the strategies used in defense and attack (Pellis & Pellis, 2007). Such behaviors observed especially during juvenile period, such as the predominance in defense of the supine position and preference for an unstable position above the opponent (Pellis & Pellis, 2007), are consistent with the theory formulated by Spinka, Newberry and Bekoff (2001), which states that a major ancestral function of play will be to provide “training for the unexpected”. The authors believe that the play will allow each individual to find their own solutions to deal with unforeseen circumstances. According to them, the play results in increased versatility of movements used to recover after loss of balance after collision with different obstacles, or after being knocked down or immobilized by an opponent, but also an increase of the individual’s ability to return following the emotional shock caused by this unexpected event.

In these species of mammals, behavior seems to be structured progressively based on the experience of free interactions during the growth period. It can be seen that essential survival skills, such as fighting skills, are formed during play activities. More interesting is that these movements are performed with some control and are the preferred strategies that facilitate play. Furthermore, when they get an advantageous position which allows the execution of an attack, this is restrained to allow partner to recover and return to competing. Thus, the competition of play fighting is not limited to the development of skills and strategies for fighting, but rather seems oriented to facilitate the cognitive and emotional development necessary in social interactions between peers (Trifa, 2015; Trifa & Deliu, 2015).

In humans, as opposed to other species, behavior is not structured only on the basis of experience accumulated from the free interactions between peers. A big part of specifically human behavior is molded through cultural
influences. The activities that sketch the event schedule or happen preponderantly during the period of growth and development are oriented principally toward the development of certain skills and abilities that are meant to increase the chances of survival (Buss, 2005). In addition, people have developed an educational system designed to maximize learning and increase knowledge for the purpose of developing and enhancing the biopsychic potential and increasing the capacity for autonomous action to reach own purposes and self-assertion, thus contributing to the good of the community to which they belong.

Play fighting makes its entrance rather early, in the framework of the interaction between parent and child, once the parent catches the child who tries to run or other such movements that simulate and attack. This kind of interaction may end up accounting, near the age of four, for about 8% of the total interactions between parent and child (Pellegrini & Smith, 1998; Smith, 2010). Play fighting between the adult and the child is usually characterized by a combination of bursts of free or unstructured play and structured activities or games through which it is tried to culturally transmit the experience accumulated across multiple generations. Such organized manifestations of fighting games are supposed to lie at the base of combat sports developed from the beginning of ancient civilizations.

Once children enter the pre-school years, they open themselves to interaction with persons from outside the familial environment and especially to interaction with peers (Shaffer & Kipp, 2010). At this age, play fighting and chasing between peers represents between 3% and 5% of playful behavior, but after this age, playful behavior can present a large variation due to cultural factors. The peak of these manifestations will be reached between the ages of 6 and 10, where they may represent between 10% and 17% of the playing time (Smith, 2010; Pellegrini & Smith, 1998; Rubin, Bukowski, & Parker, 2006), but one can report slightly higher values, between 15% and 20% in certain societies of hunter-gatherers and of farmers (Gosso et al., 2005; Bock, 2005).

Play fighting soon reaches the top of children’s preferences and gradually gathers an increasingly competitive aspect as they approach sexual maturity. Within the framework of play fighting, children end up imitating the movements seen in action films and different movements performed by adults in sporting competitions and participation in fighting games, and structured activities conducted by competent persons may bring more efficiency in motor, cognitive, affective and social development. This type of fighting games and structured activities seek to offer a set of knowledge relating to the recognition of risk situations in order to increase skill-related movements by improving balance and increasing control over one’s own body, and also to contribute to building self-protection and self-defense skills. Meanwhile, these activities set themselves the goal of contributing to cognitive development and the growth of socio-emotional competences by observing and evaluating the behavior of peers and the understanding of the perspectives of others, the encouragement of reflection over one’s own actions, the construction of principles and rules of conduct and the adoption of a flexible behavior in social relationships, the finding of adequate strategies for attaining one’s goals, the control of emotions and the channeling of energy toward the attaining of one’s goals and the recognition of the worth of peers.

Conclusions

Events during play can be very different from one species to another. Play fighting can be considered the most common and natural form of interaction with peers. In play fighting, the structure of the actions used may have a higher or lower degree of similarity to those used in real fighting. In childhood, play fighting seems to be directed toward enhancing the versatility of movement and developing various strategies for actions and, as we approach adolescence, emphasis is put on adapting these strategies to the situational context. Therefore, play fighting offers clear opportunities for learning about fighting and especially about the risks or vulnerabilities that may occur in real fighting situations. Even though fighting games can be regarded as practice for developing self-defense skills, they do not serve a single function. Play fighting can contribute to the development of conflict resolution skills, help to regulate emotions, bring reciprocity in social relations and increase social competences.

Educational policies meant to discourage play fighting, manifested more significantly in recent years, come in contradiction with the results of an increasing number of research studies. Therefore, a change of strategy is required, at least at the level of pre-school and primary education, by ensuring numerous opportunities for engaging in the play, especially during breaks and during activities with an unstructured character. In addition to these forms of free play, it is desirable to introduce some structured activities that are organized as games. These fighting games can be introduced in physical education lessons or can be used in optional sports programs which are designed to ensure
additional effectiveness in the training of skills and contribute to the cognitive, emotional and social development of youngsters. Fighting games during this period can bring other benefits, among which we mention that they ensure a medium to vigorous level of physical activity and engender a joyful disposition.

References


STRATEGIES IN THE PREPARATION OF ELITE TEAMS FOR THE GROUP EVENT IN RHYTHMIC GYMNASTICS

Mihaela MANOS

Abstract. The topic of this paper is debated within a theoretical and methodical approach imposed by the requirements in the preparation of elite teams for the group event, and for this reason it proposes new dimensions in the training methodology of the women gymnasts selected and engaged in achieving valuable international sports performances. The evolution of technical and artistic requirements, and also those related to the execution of competitive routines imposed by the content of FIG Code of Points leads to approaching a strategy for the development of an instructional methodology able to ensure increased performance capacity for the elite female gymnasts in the group event. Specifically, through the content of this paper, we aim to present the optimal instructional strategies focused on the major operational goals of high performance sports activity, which have been identified, studied and assessed within a longitudinal-type experimental research carried out on the national group team.

Keywords: sports training, rhythmic gymnastics, instructional strategies.

Introduction

Structural investigations of performance, based on the value of difficulty, level of sports technique, degree of novelty and competitive balance, demonstrate an increase in the sports results in rhythmic gymnastics for the group event. Overall, the world’s elite programs have become more difficult, more complete in terms of content of the specific technique, and organisationally, much more efficient. In this context, the group team of Romania, after an absence of 24 years, comes back to the competitive arena in 1993, managing to keep up the pace with the rhythm of evolution, as regards the important characteristics of performance. Results achieved in the World and European competitions confirm this. However, the activity of the national group team was interrupted in 1998.

Current level in literature

Most sports theorists have analysed and described the main factors underpinning the individual or group sports performance. Even if some points of view are limited or personal, they reflect the effort to highlight the directions on which the practitioners should focus their attention.

The most commonly addressed topics in the specialized literature refer to the training programming and periodization (Piazz, 1994), sports performance optimization (Durand, 1992), specific preparation in the rhythmic gymnastics training (Fialova, 1994; Duda & Mertsanidou, 1992), but without capturing the strategic issues within the training system, considering that the application of appropriate means and methods can influence the dynamics of performance capacity.

Content

Purpose

Starting from the idea formulated by Epuran (2001) and confirmed by many studies, that sports performance is “multiply determined: in a multidisciplinary and multifactorial way”, we have made the following assumptions:

• rationalisation of an appropriate content within a permanent training strategy can be objectified through a longitudinal experiment, comparing the levels of performance capacity in different stages of preparation and participation in competitions;
• prospective models of preparation and competition which include a series of quantitative and qualitative indicators can be tested, checking their functionality;
• some “subjective” phenomena which present defining characteristics for the performance capacity can be controllable and objectifiable.
Methods
Experimental method was used in the ascertaining-psycho-pedagogical variant and the laboratory-type one. This characteristic feature derived from the necessity to achieve the research objectives and, implicitly, the performance objectives set at the beginning of the preparation cycle. Results obtained in major competitions, the World Championships and European Championships, can confirm or invalidate the research hypotheses.

Strategies in the preparation of group teams
Based on comprehensive analyses of both the performance evolution at an international level and the competition and training systems taken separately, by event, the prognosis of performances for the next Olympic cycle should be made in accordance with the performance potential available and a training strategy which can lead to the development of peak performances.

The most important changes should mainly focus on the following issues:

- more efficient structuring of long-term preparation;
- optimal time and content structuring for the training and competition stages, with an influence on the work efficiency;
- developing and exploiting all individual resources for performance (individual coping resources, individual potential for training);
- proper objectification of the training and competition effects in order to manage both the training and performances based on structural methods (individual development principles).

A. Particularities of monitoring the research content (Fig. 1):

- establishing the most appropriate and significant tests and assessment trials in order to select the female athletes for the senior national group team;
- setting the instruction → performance objectives → PROGNOSIS;
- programming and planning the preparation of athletes;
- establishing the content of operational structures within the training lesson;
- establishing the technical-artistic and physical assessment trials;
- assessing the performance level.

Table 1. Stages completed in the scientific research

<table>
<thead>
<tr>
<th>Research stages</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of subjects</td>
<td>36</td>
<td>8</td>
<td>5 +1</td>
</tr>
<tr>
<td>Purpose</td>
<td>Selection</td>
<td>preparation</td>
<td>checking/assessment</td>
</tr>
</tbody>
</table>
Morphological, Functional, Biochemical:

- **Astrand Test**
- **Ryhming Test, Wahlund PWC**
- **Szögi-Cherebețiu Test (TTR)**
- **Bosco Test (maximal anaerobic power)**

**Anthropometric and nutrition indices**

Psychological:

- **Raven’s Progressive Matrices (PM-38)**
- **Eysenck’s Personality Inventory (EPI) – form A**
- **Cattell’s Anxiety Scale – “C”**
- **Guilford-Zimmermann (GZ) Test**

- determining the effects of motivational orientations
- sociometric – to investigate the psychosocial relationships within the group

**Technical/ Physical**

- to determine energy consumption based on the biological laboratory indices;
- to analyse changes in the acid-base balance;
- to assess the development level of motor qualities – strength-speed (Modified Miron Georgescu Test – MMG-15);
- to assess the balance control skills under laboratory conditions (balance platform);
- to develop the profile of group personality;
- to assess cohesion and motivation within the group;
- to perform a staged assessment of the individual development level of motor qualities;
- to establish the amounts of effort for the next stages, depending on the progress achieved and the individual possibilities.

**B. Planing the preparation of group team**

The preparation plan was approved by the Olympic Technical Commission on 10 September 1998.

**B.1. Analysis of previous activity and results obtained** (Table 2)

<table>
<thead>
<tr>
<th>DATE</th>
<th>NAME OF THE COMPETITION</th>
<th>PLACE IN THE RANKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 1993</td>
<td>International Competition Thiais</td>
<td>4th place – all-around competition</td>
</tr>
<tr>
<td>May 1993</td>
<td>European Championships Bucharest</td>
<td>5th place – all-around competition; 3rd place – group 6 ropes; 5th place – group 2 + 4O</td>
</tr>
<tr>
<td>March 1994</td>
<td>International Competition Venisseux</td>
<td>3rd place – all-around competition; 2nd place – group 6 ropes; 2nd place – group 2 + 4O</td>
</tr>
<tr>
<td>September 1994</td>
<td>International Competition Budapest</td>
<td>1st place – all-around competition; 1st place – group 6 ropes; 1st place – group 2 + 4O</td>
</tr>
<tr>
<td>September 1994</td>
<td>International Competition Calais</td>
<td>4th place – all-around competition</td>
</tr>
<tr>
<td>October 1994</td>
<td>World Championships Paris</td>
<td>11th place – group 6 ropes</td>
</tr>
<tr>
<td>October 1994</td>
<td>although qualified for the World Championships of 1995, the team interrupts its activity for financial reasons until 1997</td>
<td></td>
</tr>
<tr>
<td>March 1998</td>
<td>International Competition Thiais</td>
<td>6th place – group 6 ropes</td>
</tr>
<tr>
<td>May 1998</td>
<td>International Competition Pamplona</td>
<td>5th place – all-around competition; 4th place – 2O + 3()</td>
</tr>
<tr>
<td>May 1998</td>
<td>World Championships Seville</td>
<td>10th place – all-around competition; 9th place – group 6 ropes</td>
</tr>
</tbody>
</table>
### B.2. Competition calendar – 1999 (Table 3)

<table>
<thead>
<tr>
<th>Item no.</th>
<th>NAME OF THE COMPETITION</th>
<th>DATE</th>
<th>VENUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>INTERNATIONAL COMPETITION</td>
<td>26-28.03.1999</td>
<td>KALAMATA</td>
</tr>
<tr>
<td>2.</td>
<td>INTERNATIONAL COMPETITION</td>
<td>09-11.04.1999</td>
<td>THIAIS</td>
</tr>
<tr>
<td>3.</td>
<td>INTERNATIONALS OF ROMANIA</td>
<td>07-09.05.1999</td>
<td>ORADEA</td>
</tr>
<tr>
<td>4.</td>
<td>EUROPEAN CHAMPIONSHIPS</td>
<td>27-30.05.1999</td>
<td>BUDAPEST</td>
</tr>
<tr>
<td>5.</td>
<td>WORLD CHAMPIONSHIPS</td>
<td>28.09-03.10.1999</td>
<td>OSAKA</td>
</tr>
</tbody>
</table>

### B.3. Objectives (Table 4)

<table>
<thead>
<tr>
<th>Performance objectives</th>
<th>Score objectives</th>
<th>Instruction objectives</th>
<th>Objectives of the preparation stages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualification among the first 8 teams in the World Championships of September 1999</td>
<td>T.V. 4.00</td>
<td>A.V. 5.80</td>
<td>E 9.400</td>
</tr>
<tr>
<td></td>
<td>W.C. 4.00</td>
<td>E.C. 4.00</td>
<td>9.500</td>
</tr>
</tbody>
</table>

### B.4. Structure and content of the annual preparation plan (third year of the Olympic cycle) (Table 5)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Period</th>
<th>Location</th>
<th>Nb. training sessions</th>
<th>Nb. training days</th>
<th>Nb. days off</th>
<th>Nb. recovery days</th>
<th>Nb. travel days</th>
<th>Nb. competition days</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BASIC PREPARATORY PERIOD no. 1 (1 September – 20 December 1998)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stage 1</td>
<td>MSC 1 - accommodation 01.09-27.09.1998</td>
<td>National</td>
<td>37</td>
<td>24</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.09-25. 10.1998</td>
<td>MSC 2 - basic 28.09-25.10.1998</td>
<td>Complex</td>
<td>41</td>
<td>23</td>
<td>5</td>
<td>1½</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stage 2</td>
<td>MSC 3 - basic-development 26.10-22.11.1998</td>
<td>National</td>
<td>44</td>
<td>28</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stage 3</td>
<td>MSC 5 - accommodation 21.12.1998-03.01.1999</td>
<td>Preparation – Club</td>
<td>14</td>
<td>10</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>21.12-03.1999</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BASIC PREPARATORY PERIOD no. 2 (04 January – 5 March 1999)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stage 4</td>
<td>MSC 6 - basic 04.01-24.01.1999</td>
<td></td>
<td>31</td>
<td>18</td>
<td>2</td>
<td>1½</td>
<td></td>
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<tr>
<td></td>
<td>04.01-05.03.1999</td>
<td>MSC 7 - preparation and control 25.02-14.02.1999</td>
<td>National</td>
<td>32</td>
<td>20</td>
<td>1</td>
<td>1½</td>
<td></td>
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<tr>
<td></td>
<td>MSC 8 - refinement 15.02-05.03.1999</td>
<td></td>
<td>Complex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRECOMPETITIVE PERIOD (06 March – 23 March 1999)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### B.5. Exemples – Structure of the training microcycle no. 2 within the basic preparatory stage no. 1 (7-13 September 1998) (Table 6)

Table 6. Structure of the training microcycle no. 2 within the basic preparatory stage no. 1

<table>
<thead>
<tr>
<th>Date</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Nb. training</td>
<td>T1</td>
<td>T1</td>
<td>T1</td>
<td>T1</td>
<td>T1</td>
<td>T1</td>
<td>T1</td>
<td>11</td>
</tr>
<tr>
<td>sessions/day</td>
<td>T2</td>
<td>T1</td>
<td>T1</td>
<td>T2</td>
<td>T2</td>
<td>T2</td>
<td>T2</td>
<td></td>
</tr>
<tr>
<td>Nr. Hours Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical body</td>
<td>Ballet</td>
<td>Ballet</td>
<td>Ballet</td>
<td>Ballet</td>
<td>Ballet</td>
<td>Ballet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>preparation</td>
<td>8-10</td>
<td>8-10</td>
<td>8-10</td>
<td>8-10</td>
<td>8-9.30</td>
<td>9h 30 min</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2h</td>
<td>2h</td>
<td>2h</td>
<td>2h</td>
<td>1h 30 min.</td>
<td></td>
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</table>

**TRAINING 1**

<table>
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<tr>
<th>Hour</th>
<th>10-12</th>
<th>10-12</th>
<th>9-12</th>
<th>10-12</th>
<th>10-12</th>
<th>9.30-12</th>
<th>8-12</th>
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</table>
### TRAINING 2

<table>
<thead>
<tr>
<th>Hour</th>
<th>17-20</th>
<th>17-20</th>
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<th>17-20</th>
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<tbody>
<tr>
<td>BE</td>
<td>10x5</td>
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<td>8x5</td>
<td>8x5</td>
<td>220</td>
</tr>
<tr>
<td>2O 3*</td>
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<td>8x5</td>
<td>8x5</td>
<td>8x5</td>
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</tr>
<tr>
<td>5*</td>
<td></td>
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</tr>
<tr>
<td>BE+ AH</td>
<td>5x5</td>
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<td>7x5</td>
</tr>
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<td>2O 3*</td>
<td>5x5</td>
<td>5x5</td>
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<td>C</td>
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<td>-</td>
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<td>-</td>
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</tr>
<tr>
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</tr>
<tr>
<td>EB</td>
<td>4x10</td>
<td>4x10</td>
<td>-</td>
<td>4x8</td>
<td>4x8</td>
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</tr>
<tr>
<td>2O 3*</td>
<td>4x10</td>
<td>-</td>
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<td>4x8</td>
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<td>4x8</td>
</tr>
<tr>
<td>5*</td>
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</tr>
<tr>
<td>BE</td>
<td>2x8</td>
<td>2x8</td>
<td>-</td>
<td>2x10</td>
<td>2x10</td>
<td>2x10</td>
</tr>
<tr>
<td>2O 3*</td>
<td>2x8</td>
<td>2x8</td>
<td>-</td>
<td>2x10</td>
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<tr>
<td>5*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RE</td>
<td>2x10</td>
<td>2x10</td>
<td>-</td>
<td>3x10</td>
<td>4x10</td>
<td>3x10</td>
</tr>
<tr>
<td>2O 3</td>
<td>3x10</td>
<td>3x10</td>
<td>-</td>
<td>3x10</td>
<td>3x10</td>
<td>3x10</td>
</tr>
<tr>
<td>5*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific physical training</td>
<td>Circuit A 45 min</td>
<td>Circuit A 45 min</td>
<td>Circuit A 45 min</td>
<td>Circuit A 45 min</td>
<td>Circuit A 45 min</td>
<td>Circuit A 45 min</td>
</tr>
<tr>
<td>Total hours/day</td>
<td>7</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Assessment trials</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>SPP</td>
</tr>
</tbody>
</table>
1. Specific quantitative indicators – we exemplify below two stages: stage no. 1 of the basic preparatory period no. 1 and stage no. 10 of the competitive period no. 2 (Table 7 and Table 8):

- body elements (BE);
- actions for the specific apparatus handling (AH);
- exchange of apparatus by launching – difficulty “B” and “C” (EB, EC);
- “risk” elements in individual work (RE);
- ½ exercise (½ E);
- full exercises (FE);
- full exercises + ½ exercise (FE +½).

### Table 7. Basic preparatory period no. 1 – Stage no. 1

<table>
<thead>
<tr>
<th>Item no.</th>
<th>Components</th>
<th>Group</th>
<th>MICROCYCLE</th>
<th>MSC</th>
<th>MICROCYCLE</th>
<th>MSC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>BE</td>
<td>5 Δ</td>
<td>500</td>
<td>510</td>
<td>502</td>
<td>2012</td>
</tr>
<tr>
<td>2</td>
<td>BE + AH</td>
<td>2O + 3v</td>
<td>494</td>
<td>430</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>3</td>
<td>EB</td>
<td>5 Δ</td>
<td>374</td>
<td>274</td>
<td>300</td>
<td>320</td>
</tr>
<tr>
<td>4</td>
<td>EC</td>
<td>5 Δ</td>
<td>180</td>
<td>202</td>
<td>224</td>
<td>244</td>
</tr>
<tr>
<td>5</td>
<td>RE</td>
<td>5 Δ</td>
<td>175</td>
<td>190</td>
<td>180</td>
<td>194</td>
</tr>
<tr>
<td>6</td>
<td>½ E</td>
<td>2O + 3v</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>FE</td>
<td>5 Δ</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>FE +½</td>
<td>2O + 3v</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Table 8. Competitive period no. 2 – Stage no. 10

<table>
<thead>
<tr>
<th>Item no.</th>
<th>Components</th>
<th>Group</th>
<th>MICROCYCLE</th>
<th>MSC 19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>BE</td>
<td>5 Δ</td>
<td>100</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>BE + AH</td>
<td>5 Δ</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>EB</td>
<td>5 Δ</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>EC</td>
<td>5 Δ</td>
<td>24</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>RE</td>
<td>5 Δ</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>½ E</td>
<td>5 Δ</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>FE</td>
<td>5 Δ</td>
<td>42</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>FE +½</td>
<td>5 Δ</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
2. The method to calculate specific quantitative indicators (Table 9) is concretized as follows:

- training time (t);
- amount of combinations executed (AC);
- amount of individual work elements (Ind. AWE = BE+AH+RE);
- amount of exchanges of difficulty “B” and “C” by launching (AEL = EB+ EC);
- amount of groups of elements representing parts of exercise (AGE / P = \frac{1}{2} I + \frac{1}{2} I);
- general index of work amount during training (GAT), determined according to the formula:
  
  \[ GAT = \text{Ind. AWE} + \text{ALE} + \frac{\text{ALE}}{P} + \text{AEC}, \]

  where:
  - Ind. AWE – amount of individual work elements;
  - FAL – full amount of link elements;
  - FAL / P – full amount of link elements and parts of exercise;
  - AEC – amount of elements executed in combinations.

Table 9. Quantitative indicators – Examples for the precompetitive mesocycle and competitive mesocycle

<table>
<thead>
<tr>
<th>PERIODS / STAGES</th>
<th>PRECOMPETITIVE STAGE</th>
<th>COMPETITIVE STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRUCTURES</td>
<td></td>
<td>MESOSTRUCTURES</td>
</tr>
<tr>
<td>NB. INDICATORS</td>
<td>MSC 9</td>
<td>MSC 16</td>
</tr>
<tr>
<td>Full amount of combinations (AC)</td>
<td>17.5±4.8</td>
<td>28.0±4.7</td>
</tr>
<tr>
<td>Amount of elements executed individually (AE ind.)</td>
<td>422±4.8</td>
<td>360±24</td>
</tr>
<tr>
<td>Amount of launching of difficulty “B” and “C” (AL)</td>
<td>120±17.0</td>
<td>150±26</td>
</tr>
<tr>
<td>Amount of combinations and parts of exercise (AC / P)</td>
<td>120±4.1</td>
<td>16.3±2.5</td>
</tr>
<tr>
<td>Total amount of elements (TAE)</td>
<td>1330±10</td>
<td>1430±10</td>
</tr>
<tr>
<td>Total amount of elements per minute (TAE / min)</td>
<td>3.12±0.1</td>
<td>4.065±1.1</td>
</tr>
<tr>
<td>Amount of combinations (AC / hours)</td>
<td>9.1±1.0</td>
<td>10.7±0.9</td>
</tr>
</tbody>
</table>

3. Temporal quantitative indicators (Table 10)

Table 10. Temporal quantitative indicators

<table>
<thead>
<tr>
<th>STAGE</th>
<th>MSC</th>
<th>Nb. hours of training</th>
<th>Nb. hours of technical preparation</th>
<th>Nb. hours of choreographic preparation</th>
<th>Nb. hours of physical preparation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>MSC 1</td>
<td>114h</td>
<td>53h</td>
<td>38h</td>
<td>23h</td>
</tr>
<tr>
<td>Stage 2</td>
<td>MSC 3</td>
<td>136h</td>
<td>76h</td>
<td>32h</td>
<td>28h</td>
</tr>
<tr>
<td>Stage 3</td>
<td>MSC 5</td>
<td>28h</td>
<td>17h</td>
<td>6h</td>
<td>5h</td>
</tr>
<tr>
<td>Stage 4</td>
<td>MSC 7</td>
<td>95h</td>
<td>62h 30'</td>
<td>22h</td>
<td>10h</td>
</tr>
<tr>
<td>Stage 5</td>
<td>MSC 8</td>
<td>92h</td>
<td>62 h</td>
<td>21h</td>
<td>9h</td>
</tr>
</tbody>
</table>
### Stage 5
- MSC 9: 87h
- MSC 10: 45h 30’

### Stage 6
- MSC 11: 107h
- MSC 12: 74h

### Stage 7
- MSC 13: 15h
- MSC 14: 103h

### Stage 8
- MSC 15: 129h
- MSC 16: 101h

### Stage 9
- MZC 17: 73h
- MZC 18: 67h 30’

### Stage 10
- MZC 19: 17h

**TOTAL**
- 19
- 1649 hours
- 1044 hours
- 401 hours 30 min.
- 203 hours 30 min.

| % | 63% | 24% | 12% |

4. Assessing the quality of preparation during training (Table 11):

- amount of combinations executed without serious errors (loss of apparatus, loss of balance, lack of achieving higher level difficulty elements, etc.), which can influence stability in the execution of competition program (SCA);
- correlation between the overall amount of serious errors, which can influence the other gymnasts’ performance (and also the combination), and the amount of achieved combinations (AE / AC);
- level of stability determined by the correlation between the amount of successful combinations and the total amount of combinations (ASC / AC).

**Table 11. Qualitative indicators of preparation**

<table>
<thead>
<tr>
<th>PERIODS / STAGES</th>
<th>PRECOMPETITIVE STAGE</th>
<th>COMPETITIVE STAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of successful combinations (ASC)</td>
<td>0.73±0.30</td>
<td>4.0±0.8</td>
</tr>
<tr>
<td>Amount of errors in combinations (AE)</td>
<td>54.7±12.0</td>
<td>40.4±11.0</td>
</tr>
<tr>
<td>Correlation between the amount of errors in combinations and the total amount of combinations (AE / AC)</td>
<td>3.52±0.74</td>
<td>2.10±0.6</td>
</tr>
<tr>
<td>Correlation between the amount of errors in achieving the full exercises and the total amount of full executions (AE / AF)</td>
<td>4.28±0.32</td>
<td>2.0±0.1</td>
</tr>
<tr>
<td>Stability of correlation (SCA / AC)</td>
<td>0.03±0.03</td>
<td>0.2±0.03</td>
</tr>
</tbody>
</table>

**B.7. The ideal model of competitive routines in the group event**

The model of competitive routines has been developed based on the FIG Code of Points and after the analysis of trends and orientations in this competition event (Manos, 2008), and it includes:

- **a. Technical exercise value** (Table 12): 4 basic B-difficulties from exchange of apparatus at a distance of > 6m, for a starting score of 2.00 points (0.30 value of B-level difficulty + 0.20 exchange exigency), and a maximum number of 6 supplemental difficulties of B or C level. Maximum value – 10 difficulties for 4.00 points.
Table 12. The model of technical component for a group exercise

<table>
<thead>
<tr>
<th>4 basic B-difficulties from exchange</th>
<th>Supplemental difficulties isolated or with exchange of apparatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB 0.50</td>
<td>EB 0.50</td>
</tr>
<tr>
<td>EB 0.50</td>
<td>EB 0.55</td>
</tr>
<tr>
<td>EB 0.50</td>
<td>EC 0.40</td>
</tr>
<tr>
<td>EB 0.50</td>
<td>B 0.30</td>
</tr>
<tr>
<td>B 0.30</td>
<td>B 0.30</td>
</tr>
<tr>
<td>B 0.30</td>
<td>B 0.30</td>
</tr>
<tr>
<td>B 0.30</td>
<td>B 0.30</td>
</tr>
</tbody>
</table>

MAXIMUM 2 POINTS
4 POINTS

b. *Artistic exercise value*, involving original choreography which observes all requirements imposed by the specificity of the event regarding: organization, working formations, apparatus-related elements, body elements, variety in composition, originality, musical accompaniment, mastery in apparatus handling.

c. *Execution*, which must comply with the general and specific exigencies.

C. *Strategy of physical preparation*

Starting from a thorough analysis of the manifestation of specific motor qualities, in their complex combination proper to rhythmic gymnastics, the strategic landmarks of physical preparation have been materialized in:

- developing the content of some assessment trials that reflect, in an objectified and individualised manner, the level of these parameters that can define by stage the progress achieved;
- modeling the motor content and the action technology designed to achieve the necessary increase in all indicators that reflect the complex and simultaneous manifestation of specific motor qualities.

As regards the content of assessment trials, we focused on means of maximum efficiency made up of the technical elements composing the competition events. This allowed us to objectify simultaneously the staged assessment of the individual development level of motor qualities and to establish the amounts of effort for the next stages, depending on the progress achieved and the individual possibilities.

D. *Strategy of technical preparation*

In terms of technical preparation, the following issues were prioritised:

- technical and artistic improvement of difficulty elements in the fundamental and non-fundamental groups;
- technical execution improvement in the apparatus exchange by launching – difficulty “B” and “C”;
- improvement of technical actions typical to apparatus handling, established by the FIG Technical Commission for the competitive technical program;
- standardisation of body and apparatus handling technique for all gymnasts, with an emphasis on the aspects specific to group work – perfect timing and coordination;
- ending each microcycle of the precompetitive period with checking the technical and artistic content of the competitive events;
- designing and modeling technical preparation according to the competition requirements.

E. *Strategy for developing the composition of competition routines*

The strategic approach to the group exercise composition involves knowing the meaning of choreography in rhythmic gymnastics. In our conception, choreography, in its classical meaning, involves the organisation and harmonisation of requirements proper to the technical value within a unitary significant “motor speech”. Composition must represent: the dynamic expression; the complexity of movement forms and the relationship established between gymnast, hand apparatus and working area; the perfect symbiosis of body-apparatus actions, where the technical execution of high virtuosity and artistic and motor expresiveness contribute to the gymnastic perfection of the group.

The strategy approached by us ensured effective control over the fulfilment of compositional requirements imposed by the FIG Code of Points.
F. Psychological dimension in the preparation of group team

The strategy approached by the group team of Romania illustrates the optimalist training conception. Its coordinated actions were circumscribed around three defining aspects of sports success: the individual, the group and the organisation of preparation.

In order to implement this strategic conception, we have proceeded as follows:

- general and special psychological preparation was achieved according to the requirements of rhythmic gymnastics, based on strict individualisation, using the general principles of programming and modeling; to this purpose, there were prepared the schedule and the concrete program of psychological preparation for each gymnast separately, taking into account the personality structure and the compliance with the specific demands in the group event;
- psychological assistance was carried out depending on the training dynamics and the contextual plurality; thus, the measures taken by the psychologist, in collaboration with us, were oriented towards supporting the athletes in their efforts to achieve the predicted performance at the maximum level;
- individual assistance was applied after analysing the personality of female gymnasts; this was added a study related to the atmosphere and observation of the training lessons; the ambience study took into account the organisation of the time allotted to school schedule depending on the preparation stages, medical check, resonance of being away from family, the mark left by the preparation center delivering the female gymnasts and the parameters susceptible to deviate a motivation or lead them to give up;
- results of psychodiagnosis for the athletes were concretized in profiles and psychological characterisation sheets, and interpersonal relationships within the team were recorded under the form of sociomatrices and sociograms;
- psychological assistance dealing with special aspects in the preparation of gymnasts for competition was achieved by us, tracking the behaviour of athletes before competition (motivation, attitude towards competition, level of preparation, emotional balance), during and after competition (experiencing success or the sadness of failure).

Psychological research conducted throughout the period designed for the preparation of the team aimed to: establish the specific particularities of female athletes’ personality; determine the effects of achievement motivation and the optimal motivation of gymnasts; determine the positive effects of psychological preparation on the gymnasts; determine the degree of homogeneity and cohesion of the group.

Discussions and conclusions

The upward trend in the technical and artistic exigencies and their correct execution, based on the manifestation of exceptional motor abilities, has imposed deepening the technical and methodical knowledge, establishing an optimal framework to select gymnasts for the national team and approaching new strategies to develop an instruction methodology able to ensure increased performance capacity for the female athletes.

The strategy of developing preparation programs was achieved according to a scientifically-conducted specific methodology, the entire activity relying on the prognosis prediction and knowledge. Based on comprehensive analyses of both the performance evolution at an international level and the competition and training systems, the result prognosis for that Olympic cycle was achieved in accordance with the performance potential available to us, starting from measurable data. Knowing the athletes’ potential requires an organized, systematic and consistent assessment, which is an intrinsic part of the planning process and aims at the objective quantification of their evolution. The periodical investigation of functional parameters determined in both the laboratory and training, also under the conditions of simulated competitions, represented an objective control over the relationship between the requirements of the preparation stage and the individual support specific to each female athlete, member of the team.

The technical and artistic content of competition events, prepared during the instruction-research process, starts from the requirements stated in the international Code of Points, which are added the creative capacity of the technical group coordinated by the woman coach, the fantasy, originality, musicality, artistic preparation close to the art of dance, as well as the mastery in selecting the most appropriate technical means to handle the apparatus. Evaluation of the technical and artistic value, through the scores obtained in various competitions, has confirmed the quality preparation of the competition routines.
References


ANTHROPOMETRIC DIFFERENCES BETWEEN WOMEN HANDBALL PLAYERS FROM DIFFERENT CONTINENTS

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Abstract. The aim of this study was to identify possible differences in the anthropometric characteristics, in terms of height and weight, between senior women handball players from distinct continents. Differences in age are also a purpose of the present study. In order to highlight the possible somatic and age differences between players from Europe and outside Europe, data collected from the statistics of European Championships, World Championships and Olympic Games tournaments of the last decade were observed and compared. The basic working method is a retrospective descriptive analysis of the mentioned characteristics in the top three events. According to the results of our research, European handball players are taller and weigh more than players outside Europe. The body mass index indicates a better value for European players, meaning more athletic types for these players. In terms of age, no significant differences could be found between the two categories of players.

Keywords: handball, women, height, weight, age.

Introduction

The body composition of sports people has been a subject of great interest inside of the scientific community, taking into consideration that a correlation between somatic indices and some sports has been shown by specialists.

While the height is strongly influenced by genetics, the weight is a consequence of the environment and our more or less healthy habits. These two indices determine body composition. Human body consists of several fractions that affect body composition, quality of movement and player’s game skills (Urban, Kandrac, & Taborsky, 2011).

When talking about handball, it is known that position occupied on the playing court requires unique physical and physiological characteristics, playing performance having a multidimensional character. Vila et al. (2011) have demonstrated that in the Spanish league, women wing players exhibit important anthropometric differences to the other specific playing positions, while Tuma and Vozobulova (2011) could discover that all players’ positions are homogenous in anthropometric characteristics and somatotype. The idea of physical ability for playing position is highly individual and situation-related (Taborsky, 2009). It looks like the body prototype proposed by researches one decade ago is being substituted by another prototype based on specialization (Norton & Olds, 2001).

The aim of this study was to identify possible differences in the anthropometric characteristics, in terms of height and weight, between senior women handball players from distinct continents. Also the differences of age are a subject of the present research.

Materials and methods

The subjects of our research are the teams participating in three major tournaments for senior women: European Championship (EC), World Championships (WC) and Olympic Games (OG), organized in the last decade, between 2004 and present.

A total of 13 events were observed and compared: five EC (2006-2014), five WC (2007-2015) and three OG tournaments (2004-2012).

The collected data were processed using basic statistical characteristics as mean and standard deviation. The differences between samples were determined using t-test for independent samples.

Results

For the elite of women handball players, in the last decade a number of 13 major tournaments were played, when talking about national teams’ competitions: 3 Olympic Games, 5 World Championships and 5 European Championships. For the first two tournaments mentioned, we used only data referring to teams from outside Europe,
in order to compare the result with the last competition mentioned, where only teams from inside Europe are allowed to participate.

As seen in Table 1, for the Olympic Games, half of the teams were from Europe, so the other 4 teams were from outside Europe, from continents like Africa, South America, Asia or Australia. For the last three editions, the tallest players could be registered in Beijing, with a mean value of 175.5cm. China and Brazil teams from OG Beijing 2008 were the tallest, with a mean of 178 cm, while teams of Korea and Great Britain participating in OG London 2012 were registered with the lowest mean, 171cm.

In terms of weight, minimum values (63 kg) were found again for the teams of Korea and Great Britain from OG London 2012. Maximum values (72) were detected in the right of the team of Angola who participated in OG Athens 2004.

In these three editions, the youngest team (24.1 years) was that of China from OG Athens 2004, while the oldest (28 years) was the team of Korea who participated in OG Beijing 2008.

Table 1. Weight, height and age of women handball players

<table>
<thead>
<tr>
<th>Competition</th>
<th>Height (cm)</th>
<th>Weight (kg)</th>
<th>Age (years, month)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>OG 2012 (4)</td>
<td>173.3 ± 2.6</td>
<td>67 ± 4.6</td>
<td>26 ± 0.9</td>
</tr>
<tr>
<td>OG 2008 (4)</td>
<td>175.5 ± 3</td>
<td>69 ± 2.7</td>
<td>26.6 ± 1.2</td>
</tr>
<tr>
<td>OG 2004 (4)</td>
<td>175 ± 2.7</td>
<td>68.8 ± 3.9</td>
<td>25.3 ± 1.2</td>
</tr>
<tr>
<td>WC 2015 (10)</td>
<td>173.6 ± 3.3</td>
<td>68.2 ± 3.5</td>
<td>25.7 ± 2.4</td>
</tr>
<tr>
<td>WC 2013 (12)</td>
<td>173.3 ± 2.9</td>
<td>67.8 ± 4.2</td>
<td>25 ± 2.2</td>
</tr>
<tr>
<td>WC 2011 (12)</td>
<td>173.6 ± 2.7</td>
<td>67.6 ± 2.9</td>
<td>25.3 ± 1.5</td>
</tr>
<tr>
<td>WC 2009 (12)</td>
<td>172 ± 4.1</td>
<td>67.1 ± 4</td>
<td>24.2 ± 2</td>
</tr>
<tr>
<td>WC 2007 (12)</td>
<td>172.5 ± 3.7</td>
<td>66.5 ± 3.7</td>
<td>24.7 ± 2.6</td>
</tr>
<tr>
<td>EC 2014 (16)</td>
<td>176.9 ± 1.9</td>
<td>*</td>
<td>26.8 ± 1.9</td>
</tr>
<tr>
<td>EC 2012 (16)</td>
<td>176.4 ± 1.4</td>
<td>*</td>
<td>26.7 ± 1.2</td>
</tr>
<tr>
<td>EC 2010 (16)</td>
<td>176.6 ± 2.1</td>
<td>69.7 ± 1.9</td>
<td>25.1 ± 1.4</td>
</tr>
<tr>
<td>EC 2008 (16)</td>
<td>176.8 ± 3.1</td>
<td>*</td>
<td>24.8 ± 1.5</td>
</tr>
<tr>
<td>EC 2006 (16)</td>
<td>176.4 ± 2.3</td>
<td>69.3 ± 1.9</td>
<td>25.3 ± 1.3</td>
</tr>
</tbody>
</table>

*Data not found

In Table 1, it can also be seen the average and standard deviation values for the last five tournaments of World Championship. Besides the last edition, only ten teams from outside Europe were counted among the participants, for the rest of four editions, the number of teams observed and analysed was twelve, meaning half of the participants in this major competition.

The shortest teams registered in these five tournaments were Japan from WC Denmark 2015 and Chile from WC China 2009, both with a mean value of 166cm. The tallest teams were China from WC China 2009 and again China from WC France 2007, with an average of 179cm.

The lowest average value in terms of weight was 59 kg and was registered for the team of Congo from WC Serbia 2013, while the highest average value was 75 kg and was found in the right of the team of Ivory Coast from WC China 2009.

In the last five editions of WC, the oldest team was Japan from WC Denmark 2015, with a mean of 28.6 years, while the youngest team was Dominican Republic from WC France 2007, with a mean of 20.1 years.

Data about teams from inside Europe can be seen also in Table 1, through the observation and analyse of the last five EC, each competition having 16 participating teams.

In terms of height, it can be observed a very high homogeneity of registered means for all five competitions. The tallest team was noted to be a part of EC Macedonia 2008, with a mean of 184 cm, and that was Croatia. The
shortest teams were Denmark from EC Denmark 2010 and Spain from EC Sweden 2006, both with a mean of 172 cm.

The lowest average value in terms of weight was 64 kg and was registered for the team of Denmark from EC Denmark 2010, while the highest average value was 73 kg and was found in the right of the team of Croatia from EC Denmark 2010.

In the last five editions of EC, the oldest team was Norway from EC Hungary/Croatia 2014, with a mean of 32.8 years, while the youngest team was Austria from EC Macedonia 2008, with a mean of 20.9 years.

In Figure 1, it can be seen the comparison between mean values for height of teams from Europe who participated in the last five editions of EC and teams from outside Europe who participated in the last three editions of OG and last five editions of WC. The values were 172 and 176.6 cm, meaning a difference of 4.6 cm, statistically significant taking into consideration the p value (p = 0.003).

In Figure 2, the mean values for the weight of teams from Europe who participated in the last five editions of EC and teams from outside Europe who participated in the last three editions of OG and last five editions of WC. The values were 68 and 69.5 kg, meaning a difference of 1.5 kg, statistically significant taking into consideration the p value (p = 0.001).

In Figure 3, the mean values for the age of teams from Europe who participated in the last five editions of EC and teams from outside Europe who participated in the last three editions of OG and last five editions of WC. The values were 25.4 and 25.7 years, meaning a difference of 0.3 years, statistically significant taking into consideration the p value (p = 0.006).
Figure 3 shows mean values for the age of teams from Europe who participated in the last five editions of EC and teams from outside Europe who participated in the last three editions of OG and last five editions of WC. The values were 25.4 and 25.7 years, meaning a difference of 3 months in favour of European teams, but statistically insignificant, taking into consideration the p value (p > 0.05).

Discussions and conclusions

Identified data of anthropometric characteristics reveal a series of differences between the European and non-European teams, in terms of weight and height.

European players are generally taller and heavier than players from outside Europe. The body mass index (ratio of height and weight) indicates a better value for the European players, meaning more athletic types for these players.

The tallest team in all 13 major competitions organized in the last decade was noted to be a part of EC Macedonia 2008, with a mean of 184 cm, and that was Croatia. At the opposite pole, a non-European team who participated in WC China 2009, with an average value of 166 cm (Chile).

The lowest average value in terms of weight was noted for a non-European team who participated in WC Serbia 2013, with a mean value of 59 kg (Congo). The highest value regarding weight was observed also for a non-European team who participated in WC China 2009, with an average value of 75 kg (Ivory Coast).

In terms of age, no significant differences could be found between the two compared categories of players. It seems that for the major competitions of elite women handball, each country is counting on a majority group of experienced players, to which a number of one to three rookies are added.

The youngest team in all 13 major competitions organized in the last decade was a non-European team, with an average value of 20.1 years (Dominican Republic), while the oldest team was the team of Norway who participated in the EC Hungary/Croatia 2014, with a mean value of 32.8 years.

Anthropometric parameters and age are very important in relation with the team playing performance, but in spite of this, other relevant factors as speed, coordination or agility can compensate the lack of, for example, height, that cannot be modified, because of the high heritability coefficient. It is actually known that, as tall as a handball player is, the bigger are the problems with coordination or speed. This is one of the reasons why a team needs to be composed by a high myriad of players, in terms of height, weight or age.

Because the connection between anthropometric indices and playing performance is demonstrated, the role of coaches and trainers should be also extended in this direction. They must provide information about nutrition and hydration, both very important in terms of body mass.

References


STUDY ABOUT THE BODY SCHEMA AND THE EMOTIONAL CHARGE OF CHILDREN WITH DIABETES

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Abstract. The aim of this paper is to identify the level of self-awareness of the body schema as well as the family relations for children with diabetes, so that we could intervene by using motor activities. The research took place in UNEFS, in partnership with the DiablNutriMed Clinic of Diabetes, from December 2014 to February 2015. The sample included 11 children with diabetes aged 6 to 12 years. As research methods, there were used the bibliographic study, observation, statistical methods, Draw-A-Person Test, Family Drawing Test for evaluating the body schema, the level of self-awareness and the emotional charge of family relationships. Results have shown the capacity of children to draw the entire body, but most of them presented schematic drawings with bold parts and difficulties in self-projections of the family structure. The children tested showed that the body schema was corresponding to their chronological age, which helped them in the physical exercise programs. The assessment of emotional charge and family relationships leads to counseling for children and parents.

Keywords: diabetes, body schema, emotions, family.

Introduction

The children with diabetes are the same as other children, with an equal opportunity for a normal cognitive and behavioral development in school and society, excepting their specific regime (insulin-diet-physical exercises) and a permanent check over the blood glucose level. Aiming a normal development for children with diabetes, it is necessary a strong determination, self-confidence and good self-perception of their own bodies. The body schema is a main element of psychomotor development. The body schema is based on psychological and physiological processes and the sensorimotor experience. The body schema is a key-element in personality development and social adjustment (Radu & Ulici, 2003, pp. 57-58). Early diagnosis of this metabolic disease and early glucose blood control can influence the structure of the body image, self-perception of the body and self-confidence. Maharaj et al. (2004) emphasize in their research this relation between diabetes and psychological challenges in puberty and adolescence.

The treatment of this metabolic disorder and the challenges of everyday life bring cognitive, emotional and volitional issues that may generate behavioral problems. An important emotional issue is related to the challenges that children face in sustaining certain activities or living on restrictive diets. Children with diabetes have problems in understanding and accepting these differences between themselves and their peers; it is difficult for them to understand and accept the reasons that motivate interdictions for certain activities or foods. The emotional charge of everyday life situations is overwhelming for them. Emotions are the driving force behind the activities and they create the energy that sustains the activity (Golu, 2007, pp. 656-657). The emotional charge identified in children with diabetes is related to their fear of disappointing the loved ones, to feelings of guilt, frustration, helplessness in dealing with all the specific tasks for their age, and last but not least, the stress generated by their subjection to the treatment. So, these emotional disturbances can be found in children with diabetes and influence their social interactions. Specialists consider that it is important for the children with diabetes to be supervised by an interdisciplinary care team that must include a psychologist. Parents need to get better communication skills, so that they could face the everyday challenges regarding the treatment of their children (Ginott, 2012, p. 15) and they need to deal with the high demands of the treatment. The treatment for diabetes is the responsibility of parents up to a certain age, when this responsibility is passed to the children. This responsibility for the injections with insulin is a stress generating an important emotionally-charged task. The insulin injections should be adjusted to the food that has been ingested and the level of energy needed by daily activities; this process depends on a better understanding of the metabolic functions, types of insulin and food process characteristics. A bad management of the treatment with insulin injections may have unfortunate and damaging effects on the long term, including a shorter life expectancy (Parmar, 2005).

Families have an important role in managing the children’s treatment for diabetes, that is why their lifestyle is drastically changed and their weekly schedules become more demanding, therefore they need to be more organized. The families that have children with diabetes face frequently tensions, conflicts, communication issues and difficulties in assuming crucial roles when dealing with problematic medical situations (Eckstain et al., 2010). There are few key-elements that influence dramatically the child development and behavior, such as:
balanced family life, the life principles adopted by the family, communication and teamwork among the family members, emotional approach to the children, the amount of time spent with the children (Zus, 2014).

The specialists give support to such kind of families by identifying early education instruments. These instruments are meant to help the children with diabetes to reach functional independence as soon as possible, out of the danger of hyperglycemia or hypoglycemia. The patients have different helpful electronic devices, such as: wireless insulin pump (Trang et al., 2014), computerized glucose monitoring systems (Battelino et al., 2011), educational software (Aoki et al., 2005).

So, the aim of this paper is to identify the level of self-awareness of the body schema as well as the family relations for the children with diabetes, so that we could intervene by using physical activities.

Materials and methods

Participants. The research was developed by the National University of Physical Education and Sports of Bucharest (UNEFS), together with DiabNutriMed Clinic, from December 2014 to February 2015. The group of children interviewed had 11 members between 6 and 12 years old, with type I Diabetes, without any health complications determined by hyperglycemic or hypoglycemic episode within the last year. The children and their families where part of a larger interdisciplinary project, where they got a physical activity programme and nutrition counseling during the school year 2014-2015.

Methods. As research methods, there were used the bibliographic study, observation, statistical methods, Draw-A-Person Test (Verza, 2004) and Family Drawing Test (Jourdan-Ionescu & Lachance, 2003).

Procedure. At the beginning of the physical exercise programme that aimed to support psychomotor development, the children had an initial evaluation of their body schema by the Draw-A-Person Test, during the break while doing sports, time much needed for the increase in the glucose blood level after a period of physical effort. Children were asked to draw themselves by a trained professional. Looking for the analyses of emotional charge, the same trained psychologist used the Family Drawing Test. The children were asked to draw their families as best as they could.

After this initial evaluation, the children and their families were involved in counseling activities and physical activities aiming at the improvement of their body schema.

Results

Children’s drawings were analyzed element by element (each part of the body, mouth, nose, eyes, hair, ears, torso and arms), looking for the symbols and meanings that can unveil the emotional charge and the issues related to the body schema. Mouth drawing (Fig. 1) is an important component of the Draw-A-Person Test, which allowed us to get information regarding the communication elements, emotional issues and relationships. 46% of the tested children draw the mouth with accentuated lines, which indicates subjection and emotional immaturity. 45% of the children with diabetes draw small mouths that express the refusal to communicate their needs, as well as the denial of their emotional and social needs. Regarding the communication skills, we understand that there is a limited message exchange. The other person can be perceived as demanding, threatening and challenging. The defense mechanism involves limited emotional and communicational exchanges. One child only draws a stiffed mouth, as a symbol of his refusal and rejection of self-appraisal, communication and emotional investment in relationships.

![Fig. 1. Mouth](image1)

![Fig. 2. Nose](image2)
The nose is a symbol of sexuality and self-assertion. 45% of the children draw the face without the nose, and 55% draw a pointed nose (Fig. 2). We understand that these drawings express a delay in the development of body schema and a lack of self-assertion. This emotional frailty is related to immaturity in social interactions.

The eyes are drawn small in 46% of the cases; there are three drawings with large eye sockets and pretty small eyeballs (27%) and two drawings with large, oversized eyes (18%) (Fig. 3). The eyes are the symbol of a key-element of personality - they represent a connection with the outside world. The missing eyes from the drawings or very small eyes represent an important level of anxiety. This element reflects anxiety in the social interactions and communication issues. The drawings of children with diabetes show their desire to isolate from the rest of the world. The large eye sockets with small eyeballs represent “conflicts of compatibility” (Verza, 2004, p. 238), these children experiencing constantly drawbacks, compared to their peers. Large eyes represent eccentric tendencies, threatening attitudes in social interactions.

The hair is a symbol of sexual expression and development. Only one child does not draw the hair. We have ten drawings with wavy hair, mops, or organized locks of hair (Fig. 4). The organized locks of hair mean a normal development and good mechanism of sexual control. Disorganized locks of hair are the symbol of sexual activism and need for self-assertion.

The ears are symbolic elements of openness in sharing or receiving messages. We analyze the drawings and we conclude that eight of the children (73%) skip to draw the ears and three of them (27%) draw the ears as small elements (Fig. 5). The omitted ears represent a lack of availability in communication, an isolation tendency, avoidance and a passive-aggressive rejection of messages from the social interaction addressed to the children with diabetes. We consider that the children with diabetes react to the overwhelming number of rules and restrictions from everyday life.

The torso is an important element of body schema (Fig. 6) and also a symbol of the main emotions. Only one child overlooks drawing the torso. Most of the children draw the torso only with one line (64%). We consider that in these cases the body schema is poorly structured and this body element has a frail mental representation. The physical strength is missing from the drawings. 27% of the drawings emphasize an oversized torso, as a symbol of their need to dominate, to control while their situation is so unsettled.

The arms are perceived as instruments for help and support in social interactions. The arms are important elements in the mental representation of body schema and physical self. Two children overlooked the arms in their
drawings, five drawings have arms represented by a line, in one drawing “the person” has very long arms and two drawings have shaded arms (Fig. 7). The drawings of the arms with simple lines are symbols of the failure in social interactions by lack of instruments and of the weakness in self-defense. Children’s defense mechanisms are poor, which makes them to feel unprotected, vulnerable and to adopt a passive attitude towards the problems they are facing. The drawings with oversized arms emphasize the children’s desire for self-assertion and a significant need for control of what it is new or unknown.

Fig. 7. Arms

Family Drawing Test emphasizes three important elements: the emotional charge in family relationships, the own representation among the family members and the relations between family members.

In the Family Drawing Test, 73% of the children with diabetes express strong family connections, each member of the family with his own role. Children with diabetes draw themselves as part of the family in most cases. This is an important and positive aspect of their emotional adjustment to the family dynamics. 27% of the children do not represent themselves as part of the family. These children have detached themselves and their disease is a strong reason for being apart from the families (Fig. 9).

Fig. 8. Drawing oneself with the family
Fig. 9. The position of family members

Analyzing the results of Family Drawing Test, we have found out that 27% of the drawings have the figures centered and 73% have the figures asymmetrically placed, mainly on the left side of the page (Fig. 9). These drawings show a lack of harmonious family connections, a lack of balance in the family life. The health issues impact the family dynamics and the way the children perceive their own families.

Family connections are unraveled by the distance or closeness between figures (Fig. 10). The figures are not close but the drawings of the arms have hands and fingers as connection elements. Five children draw the arms like branches or claws directed upward, without the possibility of touching each other. The family dynamics is sealed by the medical issues of the children, and this situation does not seem to increase the family cohesion.
Discussions and conclusions

We consider that the age difference is one of the limitations of the research. The fact that the participants in the project were observed by a diabetes specialist, who was open towards our intervention, facilitated the comprehension of the specific manifestations of juvenile diabetes. Even though the children made simple, easily schematic drawings of their own body, without too many details, most of them represented their corporal schema completely, indicating the majority of the key-components. Their difficulty to perceive themselves from a valorizing perspective can be due to their life regime, the medical care and the permanent challenges determined by the glycemic fluctuations.

Even though the families of children with diabetes supported our scientific and educational intervention, they showed a certain reserve concerning the counseling activities that were proposed.

Health condition determines a state of uncertainty and lack of control. The child, through himself, does not succeed in rebalancing the transitional situation of imbalance, which can suddenly appear as a consequence of glycemic fluctuations.

The child is confronted to constant rules, many constraints that are at the same time frustrating, that limit the autonomy and favor the state of dependence on reference adults (parents, diabetes specialist).

In the analysis of the symbolic representation of their own body, we find elements that lead us to interpretations which emphasize a difficulty in the structure of a complete and harmonious corporal schema. At early ages, the health condition is not well understood by the child and the physical burdens that accompany diabetes have an impact on the representation of his own body – on the child’s auto-perception. In conclusion, the corporal schema will also reflect these difficult physical elements.

Concerning communication, the children face difficulties in the informational exchanges with the surrounding environment. Limitations are observed in receiving messages loaded with restrictions that will have a negative impact on the child’s capacity of expression.

Given the health condition of the child with diabetes, this one censors himself and filters his expressions, understanding that the life rules and not momentary wishes or age-specific impulses remain a priority.

The emotional load of everyday situations is increased in the case of the child with diabetes, as every moment of the day can get for him another signification than for his equal. The relationships with reference adults are charged with concern, hyper-protection, dependence, culpability, which exert an additional emotional pressure on the child with diabetes.

The autonomy of the child with diabetes is limited, a fact that can be secure, positive, but also limitative, that is to say negative. This contradiction of states can produce confusion to the child with diabetes and an increased energetic usage from his part.

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References


THE JUDGING SYSTEM IN DANCESPORT BASED ON QUANTIFIABLE CRITERIA – A FEEDBACK IN THE PREPARATION OF DANCERS

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Abstract. The current judging system used to evaluate dancers in the official competitions allows subjective interpretations, given that they rely on certain criteria which are only marked, but do not have a numerical correspondent. In this context, we have created and developed a judging system based on the existing one, but with improvements in both the division of criteria and sub-criteria of the elements to be judged and their quantification by awarding points according to their importance in the economy of dance, so as they reflect exactly the best evolutions in competitions. Using the new judging system allows a correct distinction between the couples of dancers, based on the scores achieved for each of the 5 dance styles (Samba, Cha-cha-cha, Rumba, Paso Doble and Jive) and each of the 5 evaluation criteria, which actually are the same, but each dance possesses some deeper nuances which should be taken into account by the jury at the judging moment. The judging system created by us was applied during the international dancesport competitions held in 2015, Latin-American dance section, for the age class of 14 to 15 years, the recording sheets providing coaches and athletes with important information on the evolution of dancers in each dance style and especially on the criteria for which the highest and the lowest scores have been obtained, those elements becoming thus the objectives to be reached in their further preparation.

Keywords: dancesport, judging, training, dance.

Introduction

In the context in which the world of dance is facing major problems due to the subjectivity of the judging panel, the implementation of an objective analysis system for the couples performing in competitions can bring extra value to the evolution of dancesport, as a competitive sports branch. In this regard, we aimed to create a new judging system based on the existing one, but where the criteria and sub-criteria were developed and quantified by awarding a differentiated number of points.

In the newly created judging system, the criteria and sub-criteria are the same for each dance, which will allow a similar but also distinct analysis of athletes’ performance from one dance to another, because the actions of muscle groups and the biomechanics of motor actions are slightly different to create the harmony specific to each dance style:

**Samba** is characterized by the existence of different rhythms within the same piece of music, the way in which they must be interpreted involving good mood and a carnival atmosphere. The rhythms are given by various musical instruments, and the performers try to express those rhythms executing distinct movements with different parts of the body, from the tips of the feet to the actions of the head, including facial expressiveness. (Sietas et al., 2013e)

**Cha-cha-cha** depicts a constant flirt-and-challenge story between the two partners; such actions are mainly created by the female dancer, who interprets freely and extrovertly the basic technique, a point from which her counterpart will usually react in the choreographic phrase by executing some “pursuing” figures, and then the choreographic story can go to various directions. (Sietas et al., 2013a)

**Rumba** is the slowest and at the same time the most sensual Latin-American dance, expressing one’s love for the partner, and obviously this love can be shared or not by the partner on the dance floor. Consequently, the interpretation ability of rumba dancers must be higher than in other styles. (Sietas et al., 2013d)

**Paso Doble** is totally different from any other Latin-American dance style and represents a matador’s fight against the bull into the arena. If the male partner must display a feeling of security, control and fearlessness during the dance, the woman must express admiration and respect for the male dancer, and her body posture will always be below that of the man. What distinguishes it from other dances are the curved lines mainly created by the upper limbs and the spine, unlike other dance styles, where the lines are as long as possible and the arms are outstretched. (Sietas et al., 2013c)

**Jive** is the most energetic Latin-American dance, therefore it is the last one performed in competitions. Its character must be cheerful and funny, including swing and rock-and-roll elements and actions in order to alternate explosive and “playful” executions. Due to the very high speed, the hip movements will not be as pronounced as in samba, cha-cha-cha or rumba. (Sietas et al., 2013b)

Purpose. The study aimed to highlight that the use of a quantified scoring system would allow a more objective evaluation of the couples performing on the dance floor and also to reveal the strengths and weaknesses of each
dance style through the scores recorded for each criterion and sub-criterion, with direct implications on the preparation process.

Materials and methods

The scoring system developed and used in this study included the following criteria:

- movement to music (total points: 2),
- posture and coordination (total points: 2),
- quality of movement and balance (total points: 2),
- partnered relationship and leading (total points: 2),
- choreography and presentation (total points: 2),

each of them cumulating a larger or smaller number of sub-criteria, which were also quantified.

It is worth mentioning that each of the 5 criteria mentioned above was analyzed by a different judge.

The study was conducted during two international competitions, one organized by the Magnum VRD Club and held in Timisoara, on 18 October 2015, the other organized by the Dance Impact Club and held in Bucharest, on 28 November 2015.

We analysed the Open category, Latin-American dance section, for the age class of 14 to 15 years. 19 couples of dancers, from our country and from abroad, participated in both the first and the second competition.

Results

The couple analyzed by us and who was the object of our study won the two competitions, being ranked 1st in both of them. The judging system developed by us proved to be consistent with the one used by the federation of specialty, in the official ranking this couple occupying the first place in both competitions.

Figure 1 shows the scores obtained in the final phase by the couple under study, for each of the 5 dance styles and the 5 criteria, using our own judging system.

As can be noted, the team recorded a poorer score at Paso Doble for the analysis criterion number 4 - partnered relationship and leading.

The scores obtained by each couple for the 5 criteria/each dance allow their coaches to compare the athletes’ performance with the previous ones, providing important information on the elements (movement to music, posture and coordination, quality of movement and balance, partnered relationship and leading, choreography and presentation) and the dance styles that must be improved in the subsequent training sessions.

The objectification of dancers’ performance behavior in the official competitions helps coaches to compare their own athletes with other participants; to exemplify, we present in Figure 2 the scores achieved at Paso Doble by the 6 couples of dancers taking part in the final phase.
The couple ranked 1st, whose competition number was 307, recorded an obvious decrease in score at Paso Doble, for the choreography and presentation criterion. This was in line with the evolutions of the other finalist couples, who were not scored much better for the above-mentioned criterion.

As regards the Paso Doble dance, it can be noted that the couple analyzed in this study achieved the highest scores for the first four criteria, excelling in posture and coordination, quality of movement and balance, but for the fifth criterion, choreography and presentation, the 6 couples obtained a quite low score, this dance being considered as a very strong and character dance.

In the second competition, the couple who made the object of our study was ranked 1st again. The scores achieved in the final competition, for all 5 dance styles and all 5 judging criteria can be seen in Figure 3.

In the couple analyzed by us, the best evolution, with maximum scores, was recorded for Samba (posture and coordination, quality of movement and balance, partnered relationship and leading), Cha-cha-cha (quality of movement and balance, choreography and presentation), Rumba (partnered relationship and leading), Jive (choreography and presentation), and the lowest scores were obtained at Paso Doble, with a minimum of 0.9 points for the choreography and presentation criterion.

It should be emphasized that, in the previous competition, the couple studied by us had recorded the lowest score for the same dance style and the same analysis criterion. The coach and the athletes motivated the poor
score obtained once again for this dance by the short time interval between the two competitions, which had not allowed them to change choreography.

For the Paso Doble dance, we present in Figure 4 the scores achieved by the studied couple (competition number 412) and the other finalist couples.

![Fig. 4. Points obtained at Paso Doble by the dancers ranked 1st to 6th for each criterion](image)

As can be noted, the highest scores were achieved for the movement to music criterion, and the lowest scores, like in the previous competition, for the choreography and presentation criterion.

The poorer scores obtained for choreography and presentation in both competitions can be explained by the fact that in this age class, 14 to 15 years, dancers are not yet mature and cannot manage very well the interpretation part, and tactically speaking, they do not have a sufficiently good “dance floor experience” to fully highlight the choreography.

**Conclusions**

The analysis of the scores obtained for each dance style and each criterion provides coaches and athletes with extremely important information revealing the strengths and/or weaknesses of the choreography pieces and the dancers’ performance and allowing comparisons between the athletes’ evolution/progress from one competition to another.

The scores achieved for each dance style by cumulating the points for the 5 criteria allowed us, on the one hand, to establish an objective ranking, and on the other hand, to evaluate the dance quality for each couple through the information provided by the number of points related to each sub-criterion, which would have not been possible using the current system that allows only the hierarchical ranking of the finalist couples based on the place ticked by the jury next to each couple.

**References**


CONTRIBUTIONS TO THE IMPROVEMENT OF TENNIS GAME FOR JUNIORS U12-U14 BY DEVELOPING THEIR MOTOR ABILITIES

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Abstract. The game of tennis, as a sport, can contribute to the complex and multilateral development of the frail body of the child, with an impact on the biological, psychological, social and communicational areas of the young performer. The dynamic and varied effort based on the fundamental and special motor abilities requires practical exercise for the purpose of forming a general and also special motor background. Our investigations and interventions in the process of preparing and promoting U12- U14 juniors in the country (according to the FRT ranking, in the years 2014 and 2015), were the motivation for choosing the theme, which was based on introducing new means of specific physical training, assessment tests, control samples and scientific observations that finally materialized in drawing positive and beneficial conclusions to the juniors. In order to improve and maintain the level of performance, we conducted a research entitled “Contributions to the improvement of tennis game for juniors U12-U14 by developing their motor abilities”. It should be noted that coordination (technical) and physical training should be developed in parallel, where it could be a predominant between each other, depending on your training goals.

Keywords: training, child, development, tennis.

Introduction

In the past century, tennis has evolved and spread on all continents, being currently practiced in most countries of the world. The continuous development of competitive tennis, for both the individual and team events, has led to the improvement of its technique and tactics, on the one hand, and its materials and playgrounds, on the other hand. Evidence on the process of selection, preparation, participation, recovery, harmonization between the athletic and school schedules, complemented by a long-term observation of the internal competitive life, the study of specialized literature, the knowledge of national tennis in its intimacy, represent the research methods used to address this paper.

Purpose of the research. The study aimed to provide a broader dimension of the motor training component in juniors U12-U14 and also to find the effective means for achieving the research objectives.

Objectives of the research

- to improve the tennis game for juniors U12-U14 by developing their motor abilities;
- to develop the observation spirit, the quick analysis of situations and the selective and clear decision-making in some basic circumstances.

Hypothesis. Using the athletics exercises in the lessons of technical preparation and multilateral physical preparation will improve the physical training component, which fosters important manifestations of the attitude and behavior towards tennis, as a sports game.

Materials and methods

The methods used in our research were the following: directed observation method; psychosocial questionnaire survey method – for the athletes; recording method – “Presenting the chart of the game, set and match”; experimental method; computerized graphical method. For the statistical and mathematical method, in the initial and final results, we have applied

Our investigation took place at CNT Bucharest, “Mircea Eliade” High School, CS Dinamo Bucharest, TC Herăstrău, TC 2000, AS CS Politehnica Club Bucharest, AS Tennis Club Bucharest, AS CS Tennis Masters, CSS2 Bucharest, CS Olimpia Bucharest, CS Major Bucharest and TC Wilson Bucharest (clubs where the players were registered), between 10.04.2015 and 24.04.2015. We assessed 24 tennis players, girls and boys. We used tennis rackets, stop-watches, tape measures, tennis balls, a factual data questionnaire and psychomotor tests. (Buzărnescu, 2015)

Results

The road to high performance in tennis requires good physical, technical, tactical and mental preparation. The better the preparation is, more the athlete climbs in the ranking (Zanisu, 1998, pp. 8). We applied four general
motor trials (Finta, 2007, pp. 128-129), as follows: 30m run test, 2x10m shuttle run sprint test, 1000m run test, wrist flexion test).

Tables 1 and 2 show the initial and final results achieved by the investigated girls in the general motor trials. In table 3 we show the statistic-mathematic interpretation for the 30m run test in the initial and final investigation for our experiment group, where we have used the Nonparametric Wilcoxon Test (Popa, 2008).

Table 1. General trials – girls: initial investigation results

<table>
<thead>
<tr>
<th>Place</th>
<th>Initials</th>
<th>Date of birth</th>
<th>Club</th>
<th>30m run test (sec)</th>
<th>2x10m shuttle run test (sec)</th>
<th>1000m run test (min)</th>
<th>Wrist flexion test (kgf)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>T.R.M.</td>
<td>12.02.2002</td>
<td>TC 2000 BUCHAREST - SEVER DRON ACADEMY</td>
<td>5.18</td>
<td>5.26</td>
<td>4.02</td>
<td>18</td>
</tr>
<tr>
<td>2</td>
<td>S.A.R.</td>
<td>27.11.2002</td>
<td>CS AS POLITEHNICA CLUB</td>
<td>5.21</td>
<td>5.24</td>
<td>3.53</td>
<td>17</td>
</tr>
<tr>
<td>3</td>
<td>T.M.G.</td>
<td>22.04.2002</td>
<td>CS DINAMO BUCHAREST</td>
<td>5.40</td>
<td>5.36</td>
<td>4.03</td>
<td>19</td>
</tr>
<tr>
<td>4</td>
<td>N.S.M.</td>
<td>09.07.2002</td>
<td>CS TEN TENNIS CLUB BUZAU</td>
<td>5.29</td>
<td>5.31</td>
<td>4.12</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>L.Ş.</td>
<td>11.02.2002</td>
<td>CS GIGLIO IASI</td>
<td>5.22</td>
<td>5.26</td>
<td>4.15</td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td>D.I.I.</td>
<td>15.06.2002</td>
<td>AS TENNIS CLUB BUCHAREST</td>
<td>5.18</td>
<td>5.20</td>
<td>4.30</td>
<td>14</td>
</tr>
<tr>
<td>7</td>
<td>I.T.</td>
<td>28.06.2002</td>
<td>AS TENNIS CLUB BUCHAREST</td>
<td>5.32</td>
<td>5.29</td>
<td>4.26</td>
<td>16</td>
</tr>
<tr>
<td>8</td>
<td>M.T.</td>
<td>11.10.2000</td>
<td>TC SUN ASSOCIATION</td>
<td>5.20</td>
<td>5.23</td>
<td>4.02</td>
<td>17</td>
</tr>
<tr>
<td>9</td>
<td>I.A.C.</td>
<td>13.01.2000</td>
<td>CS AS POLITEHNICA CLUB</td>
<td>5.28</td>
<td>5.23</td>
<td>4.01</td>
<td>17</td>
</tr>
<tr>
<td>10</td>
<td>C.A.D.</td>
<td>23.10.2000</td>
<td>AS CS TENNIS MASTERS</td>
<td>5.17</td>
<td>5.22</td>
<td>3.58</td>
<td>18</td>
</tr>
<tr>
<td>12</td>
<td>O.G.</td>
<td>05.10.2002</td>
<td>AS CS TENNIS MASTERS</td>
<td>5.30</td>
<td>5.24</td>
<td>4.22</td>
<td>14</td>
</tr>
</tbody>
</table>

Note: TC=Tennis Club; CS=Sports Club

Table 2. General trials – girls: final investigation results

<table>
<thead>
<tr>
<th>Place</th>
<th>Initials</th>
<th>Date of birth</th>
<th>Club</th>
<th>30m run test (sec)</th>
<th>2x10m shuttle run test (sec)</th>
<th>1000m run test (min)</th>
<th>Wrist flexion test (kgf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>T.R.M.</td>
<td>12.02.2002</td>
<td>TC 2000 BUCHAREST - SEVER DRON ACADEMY</td>
<td>5.01</td>
<td>5.03</td>
<td>3.42</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>S.A.R.</td>
<td>27.11.2002</td>
<td>CS AS POLITEHNICA CLUB</td>
<td>5.10</td>
<td>5.13</td>
<td>3.29</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>T.M.G.</td>
<td>22.04.2002</td>
<td>CS DINAMO BUCHAREST</td>
<td>5.11</td>
<td>5.14</td>
<td>3.41</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>N.S.M.</td>
<td>09.07.2002</td>
<td>CS TEN TENNIS CLUB</td>
<td>5.10</td>
<td>5.02</td>
<td>3.46</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>L.Ş.</td>
<td>11.02.2002</td>
<td>ČȘ`IGLIO IASI</td>
<td>4.96</td>
<td>4.98</td>
<td>3.47</td>
<td>19</td>
</tr>
<tr>
<td>6</td>
<td>D. I. I</td>
<td>15.06.2002</td>
<td>AS TENNIS CLUB</td>
<td>4.92</td>
<td>4.96</td>
<td>3.52</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>I.T.</td>
<td>28.06.2002</td>
<td>AS TENNIS CLUB</td>
<td>5.02</td>
<td>5.03</td>
<td>3.41</td>
<td>22</td>
</tr>
<tr>
<td>8</td>
<td>M.T.</td>
<td>11.10.2002</td>
<td>ȚȘ`ȘUN ASSOCIATION</td>
<td>4.96</td>
<td>4.99</td>
<td>3.30</td>
<td>21</td>
</tr>
<tr>
<td>9</td>
<td>I.A.C.</td>
<td>13.01.2000</td>
<td>CS AS POLITEHNICA CLUB</td>
<td>4.94</td>
<td>4.98</td>
<td>3.29</td>
<td>23</td>
</tr>
<tr>
<td>11</td>
<td>I.M.A.</td>
<td>13.01.2000</td>
<td>CS PRO AS SIBIU</td>
<td>4.96</td>
<td>5.00</td>
<td>3.50</td>
<td>19</td>
</tr>
<tr>
<td>12</td>
<td>O.G.</td>
<td>05.10.2002</td>
<td>AS CS TENNIS MASTERS</td>
<td>4.88</td>
<td>4.96</td>
<td>3.48</td>
<td>20</td>
</tr>
</tbody>
</table>
Table 3. Statistic- mathematic results for initial and final investigation- girls

<table>
<thead>
<tr>
<th>TESTING</th>
<th>Mean</th>
<th>Median</th>
<th>Standard deviation</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Range</th>
<th>Coefficient of variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td>5.25</td>
<td>5.22</td>
<td>0.07</td>
<td>5.17</td>
<td>5.40</td>
<td>0.23</td>
<td>1.4%</td>
</tr>
<tr>
<td>Final</td>
<td>4.99</td>
<td>4.96</td>
<td>0.08</td>
<td>4.88</td>
<td>5.11</td>
<td>0.23</td>
<td>1.6%</td>
</tr>
</tbody>
</table>

Wilcoxon Nonparametric Test

<table>
<thead>
<tr>
<th>Ranks difference testing (Final-Initial)</th>
<th>N</th>
<th>Medium Ranks</th>
<th>Sum of ranks</th>
<th>Tests parameters</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative</td>
<td>12</td>
<td>6.50</td>
<td>78</td>
<td>Z</td>
<td>-3.061</td>
</tr>
<tr>
<td>Positive</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
<td>P (2-tailed)</td>
<td>0.002</td>
</tr>
<tr>
<td>Equal</td>
<td>0</td>
<td>0.00</td>
<td>0</td>
<td>Effect size</td>
<td>0.62</td>
</tr>
</tbody>
</table>

![Fig. 1 30 m run test for girls- initial and final result](image)

Furthermore we have designed an intervention program for multilateral physical training, in which we used the following formula to calculate the total amount of themes used in each lesson, and we gave an example of lesson no. 1 in table 4.

**STE= NA × C** (Oprea, D, 2014, pp. 152)
Where: STE: total amount of themes (tasks)  
NA: practice lessons proposed to be done in a fixed period.  
C: multiplier to the number of training depending on the period as follows:  
- C≈ 1-2 (competitive period))  
- C≈ 4-7 (pre-competitive period)  
- C≈ 7-9 (competitive period)

Table 4. Lesson example for multilateral physical training using multiplier 2 of themes (C=2)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm up</td>
<td>Jogging</td>
<td>4min</td>
<td>40%-50%</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Mobility</td>
<td>10min</td>
<td>20%-30%</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Special running exercises</td>
<td>5x20m</td>
<td>75%-85%</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>SPEED</td>
<td>Accelerated running</td>
<td>4x30m</td>
<td>80%-90%</td>
<td>30-40s</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Different starts of running</td>
<td>8x10m</td>
<td>80%-90%</td>
<td>30-40s</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Forward-backward running</td>
<td>6x10m</td>
<td>80%-90%</td>
<td>30-40s</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Relay race</td>
<td>8x20m</td>
<td>90%-100%</td>
<td>60-70s</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>exercises the muscles of the trunk</td>
<td>8x15</td>
<td>60%-75%</td>
<td>20-30s</td>
<td>120</td>
</tr>
</tbody>
</table>
The analysis of this table shows that the most favorable ages in terms of yield development with the specific coordinative speed and capacity are the lowest, and for endurance and strength are the largest ages.

**Discussions and conclusions**

The hypothesis that the use of athletics exercises in the lessons of technical preparation and multilateral physical preparation will improve the physical training component, which fosters important manifestations of the attitude and behavior towards the tennis game, has been confirmed, such exercises resulting in significant improvements of the coordination and motor skills expressed through rapidity, specific spatial orientation, ability to combine movements, to control them and gain accuracy in speed, endurance and strength.

Regarding the development of motor qualities/abilities in the case of juniors U12-U14, within the studied period, we emphasize the following:

- speed, through its basic forms of manifestation, has positively developed, arguing the compared results, which indicate significant differences in:
  - the travelling speed (30m run test, 2x10m shuttle run sprint test);
- strength has positively developed during this experimental period, arguing the compared results, which indicate significant differences in:
  - the wrist flexion strength (wrist flexion test);
- endurance has improved as a result of directed intervention, the argument being the compared results, which indicate significant differences in:
  - the general endurance (1000m run test).

**Acknowledgements**

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**References**


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Popa, M., (2008), Statistică pentru psihologie. Teorie și aplicații SPSS, ediția a II-a revăzută și adăugită, Ed. Polirom, Iași
THE BASIC PRINCIPLES OF JUDOKAS PRECOMPETITVE TRAINING PROBLEMS

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Abstract. The performance judokas precompetitive training curriculum proposed, facilitates the optimization of this process, increase the efficiency of the control and its conduct and the obtaining of a higher special physical training level, the mastery of technical and tactical development and sports results in the shortest time and with the smallest physical effort of the athletes and coaches. Researchers have proved, that one of the important problems in developing principles for training athletes during the competitive period lies in the optimal structuring of the immediate precompetitive training stage.

Keywords precompetitive period; planning; training efforts; training schedules; micro-cycle; macro-cycles.

The actuality of the research.

The increasing competitiveness in the world arena, the rising trend of effort training and competition and the need to achieve a higher level of training in a strictly determined period of time, require to optimize the methods of obtaining the highest sports results in a reduced time and without being detrimental to the health of athletes.

Researchers have proved (Vomra, 2002; Platopov, 2015; Верхошанский, 2005; Иссурин, 2010; Матвеев, 1997; Матвеев, 2005; Матвеев, 2010; Платонов, 2004; Платонов, 2008; Vomra, 2005) that one of the important problems in developing principles for training athletes during the competitive period lies in the optimal structuring of the immediate precompetitive training stage. Therewith, data from the planning and implementation literature for half-cycle pre-participation (Бондарчук, 2005; Дахновский, 1979; Никуличев, 1990; Потребич, 1988; Сергеевич, 1991; Телюк, 1984; Троин, 1987) has a general and insufficient nature, that does not allow the appropriate correlation for the means, methods and schemes training in various micro-cycles of this half-cycle. This situation makes possible the prevailing of the intuitive principle in judo player training practice, based on their own experience and coach professionalism. That fact increases the possibility of teaching errors appearance, which consequently forces the sports results, underdeveloped training optimal degree, overexertion or excessive work-out and, of course, reduce sports results.

The insufficiency of concrete character and universality of methodic recommendation for the judo players precompetitive preparation and the necessity to establish exact reports of different effort parameters for the preparation to important competitions constituted as a reason for tackling this elaboration.

The novelty of the elaboration is the introduction of new principles in the precompetitive training system of performance judo player. In the research was found a mismatch of pre-competitive training intensity in the judo player practice and theoretical aspects of scientific training system; was established a divergence in coaches’ opinions regarding opportune correlation problems of the diverse content effort direction and peculiarities of judo players preparation during the precompetitive stage; it was determined the dynamics of readiness degree indices, that confirms the trend of athletes mastery structure stabilization in the directly pre-competitive preparation period; it was highlighted the dynamic indices of technical and tactical of judokas mastery in the pre-participation half-cycle. On the basis of the research was developed the methodology organizing the directly preparation precompetitive stage of judo players that facilitates enhancing mastery of athletes and increase the efficiency of training and competitive activity.

The basic principles of judokas precompetitive training

The structuring optimal preparatory precompetitive methodology of high qualification athletes must be based on three principles of training: the principle of unity and reciprocity competitive activity and structure training (Platopov, 2015; Платонов, 2008; Потребич, 1988), the principle of reciprocity gradualness and tendency for efforts limits, obtaining maximum results oriented principle, specialization and individualization (Матвеев, 1997; Матвеев, 2005; Матвеев, 2010).

According to the demands of the first principle, it must be taken into account that the structure, reciprocity and interdependence competitive activity and training of highly skilled athletes is realized on the basis of certain regularities of organizing training methodology. This allows the creation of optimal structure of the training process by coordinating the strict compliance of the types of activity listed in improving the optimization of various components of training judo players.
The essence of reciprocity gradualness principle and tendency for maximum efforts, represents the basis of the affirmation that the efforts, nearly the functional possibilities of the human body limit, may favor, with the condition of beneficial conditions improvement, significant changes and favorable conditions for increasing weights of these possibilities. This situation is particularly important because the planned effort, reaching the limit of possible functional activity of the organism, should not exceed the limit possibilities of adaptation in no way. On the other hand, maximum effort realized in full measure, proposed to the athlete’s real opportunities, constitutes an obligatory factor for raising the level of training.

The principle of gearing for maximum achievements, specialization and individualization of depth requires ensuring proper compliance efforts to increase the body's ability to adapt, given by the development of different individual rhythm training. This principle is of paramount importance, because by virtue of the individual differences of how to adapt the body, apparently identical efforts can have quite different consequences. In developing experimental method parameters, this principle was applied in planning appropriate means for training and standardization efforts indices.

The training effect of the application of complex training planned ways and methods for the precompetitive preparation of the athletes determine not only the volume of training opportunities, but also the appropriate allocation of time, the system of combining derivation intervals. Thus, experimental methods of organizing the precompetitive stage of athletes’ preparation was developed based on the following principles (Manolachi, 2003; Manolachi, 2015; Manolachi, Hantău, 2000; Platonov, 2015):

- Selection of the capable training means that assure the necessary mechanisms for the athlete’s adaptation;
- Appropriate combination of diverse action methods over the body;
- Introduction of means and methods with a higher training potential that would ensure obtaining and maintaining evolutionary effect;
- Ensuring optimal interaction of the training means with diverse training orientation.

The selection of training means and methods for the experimental program was conducted on the basis of the so-called dynamic compliance (Verhoosanskiy, 1985; Verhoosanskiy, 1988; Verhoosanskiy; 2005). According to this principle, means and methods used must be appropriate to the possible extent competition from a parameter requirements. This helps to change the arrangements for providing means of external character resistance volume manifested efforts and methods of carrying out exercises. Method exercises as a way of providing means specialized training to some extent predetermined the character and orientation training effect on the judo player body. Taking this into account, the experimental methods were priority applied to the training method repeated serially, with competitive and circular intervals.

Analyzing the process of precompetitive athlete preparing as a transposition of an incipient state, which determines preparation, in another condition necessary to achieve the planned concrete, we can say that its accomplishment requires a certain range of conditions. One of the first conditions is the need to know the full parameters of the athlete readiness, at the beginning of the period considered and the state in which the athlete must be at the end of this period.

The second condition can be considered the setting of the most unstable and informative block indices and ways to control their dynamics, which is determined by comparing the athlete gained readiness.

The third condition is the need to express the applied indices in concrete figures and numerical parameters (Manolachi, 2003; Tenik, 1984).

Actually, the basic stage in the realization of the precompetitive training structure is the process formation of training plans and methodical scientific evidence insurance plans under an optimal regimen for each athlete.

Almost all experts recommend to include before competitions the rehabilitation or generalization microcycle, in which the volume effort is considerably reduced while the relatively high intensity is maintained.

The problem of optimizing the precompetitive training for high performance athletes at present is an actual aspect in the theory of sports training and, therefore, requires scientific motivation, taking into account modern trends of sports activity development.

In order to achieve the research were addressed the following scientific methods:

- Theoretical analysis and generalization of specialized literature;
- Pedagogical observation;
- Interviewing specialists;
- Pedagogical experiment;
• Statistical and mathematical method.

The elaboration of direct experimental preparation of precompetitive judo player performance was achieved in several successive stages.

The first stage, during which was carried out the questioning of highly qualified coaches, allowed the study and generalization of practical experience of specialists according to existing precompetitive methodology training of judo player, especially under the arrangements for planning and conducting efforts workout at the directly precompetitive preparation judoka stage, it were determined the predominant character and orientation training effect in the final educative-instructional training camps.

In the second work stage it was established the informative diagnostic model tests complex and control normative of judo player performance during the precompetitive training. It was stated that the resort provides sufficient objective information of judo players degree preparation in order to get operative and current corrections in various indices effort workout. At this stage of the research were tested 25 performance judo players that were in preparation for important competitions at 8 informative tests, being established dynamic structure factor indices of the judo player physical readiness depending on the preparing precompetitive stage and highlights the correction of these indices according to micro-cycles preparation. All this allowed to determine control norms indices of physical training preparation for competitions and developing informative levels of the technical-athlete judokas’ indices depending on the competitive battles style.

In the third step was carried out elaboration and approval of experimental methodology of structuring the precompetitive preparation of performance judo players. This method differs from the previous ones by means and methods of preparation and following basic parameters of the effort report. Approval was conducted under special pedagogical experiment in which was showed high effectiveness of the experimental methodology of judo players precompetitive preparation.

The application characteristics of training methods, ways and conditions, highlighted within the mentioned phases, of precompetitive training of performance judo players, such as the establishment of failures and discrepancies in planning and realization of training process, existing in athletes training practice in different genres of battle, allowed to determine the necessity of elaboration the experimental method of performance judo players precompetitive training.

The main characteristics of the training setting efforts, of the precompetitive training experimental method of the performance judo players, are generally presented in the table 1.

<p>| Table 1. The characteristic of experimental method of performance judo players pre-competitive training |</p>
<table>
<thead>
<tr>
<th>Training ways and efforts indices</th>
<th>Summary values</th>
<th>Micro-cycles</th>
<th>Macros-cycles</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>The micro-cycles duration (days)</td>
<td>18</td>
<td></td>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Introductive</td>
<td>Model</td>
<td>Regeneration</td>
<td>Specialized</td>
<td>Maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The volume of training effort (min)</td>
<td>1400</td>
<td>330</td>
<td>240</td>
<td>265</td>
<td>300</td>
<td>265</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The volume of training effort (%)</td>
<td>100,0</td>
<td>23,6</td>
<td>17,1</td>
<td>18,9</td>
<td>21,4</td>
<td>18,9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The volume of D.F.J.’s ways</td>
<td>30,0</td>
<td>45,2</td>
<td>20,2</td>
<td>34,6</td>
<td>25,8</td>
<td>24,2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The volume of special training ways (%)</td>
<td>70,0</td>
<td>54,8</td>
<td>79,8</td>
<td>65,4</td>
<td>74,2</td>
<td>75,8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The co-report of training effort according to intensity areas (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- minimal</td>
<td>20,0</td>
<td>25,5</td>
<td>18,5</td>
<td>22,8</td>
<td>18,0</td>
<td>15,2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- medium</td>
<td>50,0</td>
<td>47,0</td>
<td>22,5</td>
<td>71,4</td>
<td>41,0</td>
<td>68,1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The detailed analysis of the content of this chart demonstrates that considering from the goals of precompetitive training phase, the training effort according to experimental methodology is divided into 5 micro-cycles relatively independent with the duration of 3-5 days. The first micro-cycle effort is oriented to the insurance of the optimal restructuring of adaptation of the body for maximum efforts, in the second micro-cycle is created the efficient competitive model for the automation of appropriate stereotypes, the characteristics conditions of real contests; the third micro-cycle has a character of reduction towards the creation of healthy conditions for recovery after the maximum efforts; the fourth micro-cycle has as an aim the active restructuring of the collected special training potential in constant dexterities of the technical-tactical mastery, realizing the conditions of the competitive activity; the fifth micro-cycle has a character of maintenance and solves the problems of the optimum instruction of the training level of judo players.

The dynamic of the training effort volume has a cyclical character, as well as bigger hints of volume that are planned in the introductive micro-cycle, which has 23,6% from the general training volume, but in specialized micro-cycle, where the effort’s volume is identically enough higher it has 21,4 %.

A substantial dynamics is attested in the correlation of general and special training ways of judo players. Thus only in the introductive micro-cycle, this correlation is almost equivalent and has 45, 2 % towards 54,8 %. At the same time, in the next micro-cycles is planned a considerable improvement of the special training volume and the analyzed correlation represents: in the micro-cycle model -20,2% towards 79,8%; in the recovery micro-cycle -34,6 towards 65,4%; in the keeping micro-cycle -24,2 % towards 75,8 %.

The indices of medium intensity of the efforts in micro-cycle have an oscillating character well defined. In the introductive micro-cycle these one have a level bigger than the usual and represent 5,2 points. In the model micro-cycle, this level reaches the highest values equally with 5,8 points. Afterwards, in the recovery micro-cycle, the medium intensity of the effort is reduced suddenly till 3,8 points, that corresponds to recovery objectives after the maximum efforts. In the specialized micro-cycle the level of training intensity grows substantially till 5,3 points, but then in the maintenance micro-cycle is reduced again till 3,9 points. Main vibrations of the efforts indices of medium intensity are provided considering the necessity of the adaptation insurance of the judo players body at the specific efforts and the attainment of a high capacity of work in specialized micro-cycle.

The parameters of volume efforts, caused by the realisation of volume activity ( in minutes) of the effort intensity ( in points), also have an oscillatory dynamics sufficiently evident, presented in Figure 1.
Fig. 1. The dynamics of training effort indices at the precompetitive instruction phase

Conventional signs:
- Shaded columns - parameters of effort volume (min.);
- Not shaded columns – parameters of effort intensity (points);
- Interrupted line – effort’s volume (u.c.);
- Dotted line - medium level of effort indices;

At the same time in mentioned micro-cycle there are attested the biggest differences of the volume parameters, that has an insignificant and intensity importance, its level achieves maximum values. Such discrepancies are predetermined by the model micro-cycle content, containing efforts with competitive and oriented character. In the recovery micro-cycle, the effort volume decreases till minimum values (1007 u.c.), but essentially based on precipitant reduction of the intensity level, necessary for the reestablishment of judo players’ body after maximum efforts. In the specialized micro-cycle the volume and effort intensity are increased till a superior level than the medium one, determining the analogical improvement of the effort volume till the same level (1590 u.c.). In the final retention micro-cycle, the effort volume decreases again till 1034 u.c., but this reduction is obtained as in the recovery micro-cycle, based on the considerable reduction of the effort intensity.

According to the medium dynamics intensity of efforts, it supports important changes in the effort training report of the intensive areas. This information is represented in figure 2.

According to exposed dates from figure 2, we can assert that in the introductive micro-cycle, the analyzed correlation has a relatively traditional character and consists of 25,5% of small intensity efforts, 47,0 % of medium intensity efforts, 17,5% of big intensity efforts and 10 % of efforts in the maximum intensity area. Then, in the model micro-cycle, the report of training efforts, changes suddenly, constituting 18,5 % of activity in the small intensity area, 22,5 % of activity in the medium intensity area, 10,0% of activity in the grown intensity area and 49,0 % in the maximum intensity area. In the recovery micro-cycle the report of efforts
changes in the opposite direction, excluding absolutely the maximum intensity efforts with the preponderance of the training activity with a medium intensity (71.4%) and little (22.6%). The character of specialized micro-cycle efforts is determined by the activity volume in all the activity areas: in the little intensity area - 18.0%, in the medium intensity area - 41.0%, in the grown intensity area - 25.0%, and in the maximum intensity area - 16.0%. In the retention micro-cycle, the efforts with maximum intensity are excluded again, but the area of preponderance training activity represents the medium intensity efforts (68.1%) with a certain volume of little intensity efforts (15.2%) and big (16.7%).

Fig. 2. The report of training efforts after intensity areas at the precompetitive training phase.

Thus, the experimental methods of judo players precompetitive training, presented through numerical characteristics in chart 1 and in figures 1 and 2, differs from the previous ones after the content of training ways and the important effort indices. The main differences consist of: the improvement of medium intensity efforts, especially in the model micro-cycle; the oscillatory dynamics of the intensity and effort’s amount; sudden changes of the general and special training of report ways with the enhancement tendency of specialized volume charges; the substantial dynamics of the training report efforts in the intensive areas with an accentuated concentration of the efforts in the model micro-cycle and with the preponderance of training activity of medium intensity in recovery and retention micro-cycles.

All these have allowed the elaboration of new important methods for the precompetitive training of performance judo players, whose efficient achievement was proved during the basic pedagogical experiment.

Conclusions

The efficient methodology elaborated by us for the precompetitive training of athletes provides the inclusion in its summary of a specific content of training ways and the correlation of main parameters of training effort. This peculiarity is characterized through the introduction of the next principles in the experimental methods:

- the increase of medium intensity efforts, especially in the model micro-cycle;
- the oscillatory dynamics of volume, intensity and effort’s size;
- the main changes of the co-reports, general and special physical training ways leaning to the improvement of the specialized exercises volume;
the considerable dynamics of the correlation of the training efforts according to intensity
laws with a maximum concentration of efforts in the model micro-cycle;
the preponderance of training activity of medium intensity in the recovery and retention
micro-cycle.

The acknowledgement of experimental programme elaborated in this manner, has
demonstrated its advantage towards the traditional methods of judokas precompetitive training
at the complex diagnostic-model of majority parameters, including indices of special physical
training and obtaining the technical-sports mastery of judo players. This superiority represents
a crucial factor assuring the regulated sports result within the next competitions.

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SWIMMING IN PULMONARY DISEASE

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Abstract. One of the main behavioural risk factors is smoking, the most preventable cause of death and disease, because it can be successfully removed through comprehensive and tobacco-control policies. Although the water environment has a large rehabilitation potential extending from the treatment of acute injuries up to health maintaining in the confrontation with chronic diseases, however it still remains a means which is too little used. Recent research has proven that exercises performed on dry land by the patients diagnosed with chronic lung disease are often hard to endure. The study was conducted on a number of 8 smokers with a mean age of 46.3 years (±9 years), 5 males and 3 females. Of them, 3 subjects were diagnosed with chronic obstructive pulmonary disease (COPD), 2 subjects with bronchiectasis, 1 subject with chronic bronchitis, 1 subject with chronic bronchitis (dyspnoea at moderate and intense effort) and 2 with restrictive respiratory failure. The purpose of this paper is to improve quality of life of the research subjects diagnosed with bronchial asthma, chronic obstructive pulmonary disease and restrictive respiratory failure, by recovering the lung function following the application of aquatic therapy programmes adapted to individual possibilities. The results have revealed significant effects on the lung functionality in patients with pulmonary diseases.

Keywords: swimming, pulmonary disease, adults

Introduction

According to the World Health Organization (2008), any decision on investing in health is reinforced by the value that individuals and societies attribute to better health (as a major component of societal welfare), regardless of the immediate economic consequences of precarious health. Policy makers must possess a good understanding of the main health-related problems in Europe and their socioeconomic consequences before deciding how to invest in the health system interventions which can improve health.

One of the main behavioural risk factors is smoking, the most preventable cause of death and disease, because it can be successfully removed through comprehensive and tobacco-control policies. In the European Area, 16% of deaths are caused by smoking, a percentage that represents the highest rate at a global level. Such a finding, 10 years after the World Health Organization has adopted the Framework Convention on Tobacco Control, urges a retrospective view and an inventory of the situation in the Area, for the efficient management of actions towards reducing the number of smokers and then stimulating discussions focused on the achievement of a tobacco-free European Zone. As explained in the World Bank report, Curbing the epidemic: Governments and the economics of tobacco control, if the number of those who start smoking is reduced by 50% until 2020, the number of deaths caused by tobacco will drop from about 520 to about 500 million in 2050. On the other hand, if half of the current smokers gave up smoking up to 2020, the number of deaths caused by tobacco would drop from 520 to 340 million in 2050 (ENSP, 2016).

Pulmonary diseases are becoming more and more often causes of morbidity and mortality in the modern world (Ries et al., 2007). Chronic obstructive pulmonary disease (COPD) is the most common chronic lung disease and a major cause of death and pulmonary disorders (Fishman, 2008). COPD is a leading cause of morbidity and mortality worldwide and results in an economic and social burden that is both substantial and increasing. COPD prevalence, morbidity and mortality vary across countries and across different groups within countries. COPD is the result of cumulative exposures over decades. Often, the prevalence of COPD is directly related to the prevalence of tobacco smoking, although in many countries, outdoor, occupational and indoor air pollution – the latter resulting from the burning of wood and other biomass fuels – are major COPD risk factors (GOLD, 2016).

In Romania, the incidence of bronchopulmonary cancer, compared to other types of cancer tumours, becomes higher with over 7,300 new cases recorded every year. Bronchiectasis is more common in men, and over half of the cases occur in children under 15 years old. The incidence rate of tuberculosis cases in Romania is 100 per 100,000 inhabitants. Thus, every hour 3 people are diagnosed with tuberculosis (Societatea Română de Pneumologie, 2013). National Tuberculosis Control Programme (PNCT) has made remarkable progress in detecting and treating tuberculosis (TB). As a result of purposeful actions and in compliance with a national strategy based on the Global Plan to STOP TB-4, issued by the World Health Organization, Romania has recorded the following results: detection of TB cases usually exceeds the international target of 75%; TB incidence decreased from the peak of 142.2 cases per 100,000 inhabitants (2002) to 79.9 cases per 100,000 inhabitants in 2012; treatment success rate for new cases of positive-microscopy TB usually exceeded 80%, reaching 86% in 2012 (for the 2011 cohort), and 86% for new cases of negative-microscopy and extra-pulmonary TB; deaths
caused TB decreased from 10.8 (2002) to 5.3% in 2013. Despite these remarkable successes, Romania continues to record some of the highest TB percentages in the EU/EEA countries, reporting annually almost 13,000 new cases (12,866 in 2013) and 1,136 deaths caused by TB among the Romanians (Planul Strategic Național 2015-2020, 2014).

The components of multidisciplinary lung rehabilitation programmes include the education of patients and their families, thoracic physiotherapy, muscle training, emotional support, nutritional support, occupational therapy. According to specialists, there is no consensus regarding the optimal duration of pulmonary rehabilitation intervention. Its duration depends on the changes in the patient’s lifestyle. Some external factors also influence the length of the programme, for instance healthcare systems and refund policies, access to programmes, functional disability level, reference models of the healthcare provider, and each patient’s ability to progress towards the ultimate goal of treatment (Ries et al. 2007).

Physical activity is recommended for all patients with COPD. There is very little COPD-specific evidence to support recommendations for physical activity other than studies of pulmonary rehabilitation (the physical exercise component is believed to provide the most benefit). However, given the overall population benefits of physical exercise and its role in primary and secondary prevention of cardiovascular disease, it seems intuitively correct to recommend daily physical activity (GOLD, 2016).

The water environment has a large rehabilitation potential extending from the treatment of acute injuries up to health maintaining in the confrontation with chronic diseases, however it still remains a means which is too little used. Few clinical trials have focused on the impact of programme length on the rehabilitation outcomes, but the existing data suggest that exercise tolerance can record higher increase after applying longer duration programmes.

The research purpose is to improve quality of life of the investigated subjects diagnosed with bronchial asthma, chronic obstructive pulmonary disease and restrictive respiratory failure, by recovering the lung function as an effect of applying aquatic therapy programmes adapted to individual possibilities.

**Materials and methods**

*Subjects of the research – case studies*

The study was conducted on a number of 8 smokers with a mean age of 46.3 years (±9 years), 5 males and 3 females. Of them, 3 subjects were diagnosed with chronic obstructive pulmonary disease (COPD), 2 subjects with bronchiectasis, 1 subject with chronic bronchitis (dyspnoea at moderate and intense effort) and 2 with restrictive respiratory failure (Table 1).

<table>
<thead>
<tr>
<th>Case</th>
<th>Gender</th>
<th>Age (yr)</th>
<th>Height (cm)</th>
<th>Weight (kg)</th>
<th>Diagnostic</th>
<th>Tobacco consumption (packs/yea) (PA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>42</td>
<td>82</td>
<td>187</td>
<td>Chronic bronchitis (dyspnoea at moderate effort and cough)</td>
<td>20 PA</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>52</td>
<td>96</td>
<td>168</td>
<td>BPOC 3rd stage GOLD</td>
<td>30 /PA</td>
</tr>
<tr>
<td>3</td>
<td>F</td>
<td>40</td>
<td>58</td>
<td>170</td>
<td>Right lung bronchiectasis</td>
<td>15 /PA</td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>47</td>
<td>64</td>
<td>157</td>
<td>BPOC 3rd stage GOLD and chronic tobacco smoking</td>
<td>20 /PA</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>48</td>
<td>68</td>
<td>160</td>
<td>BPOC 2nd stage GOLD</td>
<td>30 /PA</td>
</tr>
<tr>
<td>6</td>
<td>M</td>
<td>49</td>
<td>70</td>
<td>171</td>
<td>Restrictive ventilatory failure</td>
<td>25 /PA</td>
</tr>
<tr>
<td>7</td>
<td>F</td>
<td>45</td>
<td>60</td>
<td>159</td>
<td>Left lung bronchiectasis</td>
<td>15 /PA</td>
</tr>
<tr>
<td>8</td>
<td>M</td>
<td>47</td>
<td>72</td>
<td>180</td>
<td>Restrictive respiratory failure</td>
<td>30 /PA</td>
</tr>
</tbody>
</table>
Characteristics of aquatic therapy programmes

The main characteristics of these projects are determined by the following aspects:

- **Multidisciplinarity.** In developing these projects, interdisciplinary work was done; their contents were integrated into a comprehensive and unitary programme adapted to the needs of each subject. The multidisciplinary team that took part in the rehabilitation of these patients was made up of: a pulmonologist physician, specialist in the management of these disorders - based on his recommendations, it was developed the content of each aquatic intervention programme; a physical therapist - who assessed the physical needs of each subject, designed and conducted the aquatic intervention programmes, and individualized the aquatic exercises depending on each subject’s tolerance to physical effort.

- **Individualization.** The development of these projects was based on the individual assessment of each subject, establishing realistic objectives and differentiated treatment. The objectives of water therapy programmes were represented by: improving respiratory symptoms (dyspnoea, fatigability); increasing exercise tolerance, regardless of the diagnosis of each subject; improving quality of life, with effects on health status; resuming domestic, professional and leisure activities by each subject.

These programmes were applied over a 6-month period. The frequency of sessions was three times a week, each lasting up to 60 minutes (the duration of water therapy was increased progressively, depending on tolerance, starting with 30 minutes and reaching 60 minutes). This stage was conducted at the swimming pool of “Carol Davila” University of Medicine and Pharmacy, Bucharest.

**Case study results obtained from the lung capacity assessment**

Table 2. Descriptive statistics on the subject’s results in the spirometry test – Pre-test – Post-test

<table>
<thead>
<tr>
<th>Case</th>
<th>CV (%)</th>
<th>FVC (%)</th>
<th>FEV1 (%)</th>
<th>FEV1/FVC (%)</th>
<th>PEF (%)</th>
<th>MEF50% (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pre-test</td>
<td>Post-test</td>
<td>Pre-test</td>
<td>Post-test</td>
<td>Pre-test</td>
<td>Post-test</td>
</tr>
<tr>
<td>2.</td>
<td>65.3</td>
<td>92.5</td>
<td>73.1</td>
<td>75.9</td>
<td>78</td>
<td>89.9</td>
</tr>
<tr>
<td>3.</td>
<td>65.7</td>
<td>76.4</td>
<td>68.3</td>
<td>77.6</td>
<td>48.6</td>
<td>64.8</td>
</tr>
<tr>
<td>4.</td>
<td>68.2</td>
<td>81</td>
<td>64</td>
<td>81.8</td>
<td>80</td>
<td>109</td>
</tr>
<tr>
<td>5.</td>
<td>67.3</td>
<td>78</td>
<td>69</td>
<td>75.1</td>
<td>54</td>
<td>70.2</td>
</tr>
<tr>
<td>6.</td>
<td>62.3</td>
<td>83</td>
<td>56</td>
<td>69</td>
<td>68</td>
<td>74</td>
</tr>
<tr>
<td>7.</td>
<td>65.2</td>
<td>68</td>
<td>35</td>
<td>40</td>
<td>70</td>
<td>78.6</td>
</tr>
<tr>
<td>8.</td>
<td>45.7</td>
<td>85.9</td>
<td>30</td>
<td>70</td>
<td>57.9</td>
<td>63</td>
</tr>
<tr>
<td>9.</td>
<td>57</td>
<td>69</td>
<td>40</td>
<td>60</td>
<td>42</td>
<td>67</td>
</tr>
</tbody>
</table>

Legend: CV = current volume; FVC = forced vital capacity; FEV1 = forced expiratory volume in one second; FEV1/FVC = Tifeneau-Pinelli Index; PEF = peak expiratory flow; MEF 50% = maximal expiratory flow at 50%.

**Discussions and conclusions**

Tobacco consumption is the most preventable cause of death. Estimates indicate that in 2020 it will also be the most common cause of disease; it is worth mentioning that the problems engendered are not only medical, but also economic, social, environmental and even political. Tobacco smoking is a unique health-related issue, because it mainly covers the prophylactic sphere – prophylaxis could lead to avoiding many premature deaths, as well as the sphere strictly related to drug area – in most consumers, it induces strong addiction. Clinical research has revealed that practicing physical exercise programmes has significant positive effects on the quality of patients’ life, and this research provides a high level of evidence regarding the effects of physical activity programmes on patients with pulmonary diseases and the level of their quality of life (Petrescu et al., 2014).

The intervention of aquatic therapy exercise is recognized for its prevention power and for allowing treatment in a different environment, although it is not considered part of standard pulmonary rehabilitation. Aquatic therapy exercise intervention is a discipline which includes hydrotherapy, spa therapy, balneotherapy and...
Physiotherapy, and is used to prevent and treat diseases with the help of water. Hydrotherapy is a complementary therapy that uses the water temperature and pressure as a therapeutic agent, at a given temperature (Geytenbeek, 2002). Recent research has proven that exercises performed on dry land by the patients diagnosed with chronic lung disease are often hard to endure (McNamara et al., 2013).

The results of our study reveal that applying the global swimming plan over a period of 6 months has had significant effects on the lung functionality. The spirometry test highlights increased lung functionality for all participants in the study. Respiratory functional tests have shown, for each of the 8 participants in the research, increased pulmonary volumes and capacities, as well as exercise tolerance. In 2 of the 8 cases studied, final spirometry indicated normal values. Continuing physical activity (swimming) through purposely designed programmes, bronchodilator therapy, respiratory kinesitherapy, quitting smoking, appropriate diet, are measures that can ensure an increase in both quality of life and survival.

Acknowledgments

All authors had equal contributions

References


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Jurnalul Discobolul promovează cercetarea fundamentală și aplicativă, în special rezultatele obținute în cadrul proiectelor de cercetare națională și internațională, precum și contribuțiile științifice ale unor personalități din mediul universitar și cel socio-profesional, aferente domenioilor de interes pentru revista. Sunt acceptate spre publicare, materiale originale, care nu au fost publicate parțial sau integral în alte reviste. Este necesar ca articolele deja publicate să fie în proporție de 40% diferite de cele la care ne referim la acest punct.

Articolele vor fi redactate în limba engleză și vor fi publicate după ce au parcurs cele două etape ale procesului de recenzare, în urma deciziei în acest sens;

Autorii ale căror articole au fost respinse în urma procesului de recenzare, sau care necesită modificări vor fi anunțați, la adresa de e-mail pe care au specificat-o în momentul trimiterii articolului, în intervalul de 4-6 săptămâni;

Înregistrarea materialului în vederea publicării se va face după achitarea taxei de abonament de către fiecare autor, co-autor și, după caz, a taxelor suplimentare;

Responsabilitatea pentru afirmațiile din text revine în exclusivitate autorilor. Redacția își rezervă dreptul de a refuza publicarea articolelor care nu respectă mențiunile prevăzute în secțiunea Instrucțiuni pentru autori sau în care nu s-au făcut modificări conform cerințelor/recomandărilor.

Pregătirea manuscriselor

Articolele vor fi redactate în format A4 Word, utilizându-se fonturi Times New Roman, mărime 10 pt., la 1,15.

Ilustrațiile:

Sunt admise maxim 4-5 materiale ilustrative (tabele, grafice, figuri simbolice); acestea vor purta titluri și vor fi numerotate conform specificațiilor din text; este recomandat ca acestea să fie furnizate la dimensiunile la care se doresc publicarea. Nu sunt admise materiale scanate cu excepția figurilor/ foto. Tabele vor fi numerotate cu cifre arabe, în ordinea apariției din text, vor purta un titlu clar și concis menționat deasupra fiecărui tabel. Figurile, graficele vor avea o calitate superioară (min.300 pixels), vor fi denumite concis și numerotate sub fiecare apariție.

Acronimele folosite vor fi detaliate la prima lor apariție în text.

Structura generală a articolelor:

1. Pagina de titlu va cuprinde:
   • Titlul articolului - în limbile română și engleză
   • Numele și prenumele autorilor
   • Afilierea instituțională, adresa de corespondență, oraș, țara
   • Adresa de corespondență (e-mail).

Exemplu:

TITLU.....

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• Abstractul (numai în engleză). Abstractul cuprinde între 100-150 cuvinte.
• Cuvintele cheie (în engleză). Pentru fiecare lucrare vor fi selectate între 3-5 cuvinte, reprezentând termenii utilizați în lucrare.

2. Articolul nu va depăși 6 pagini pentru studiile de cercetare, 4 pagini pentru lucrările tip eseu, 1 pagină pentru recenzii, informații, reportaje de la evenimente științifice.

• Studiul de cercetare va cuprinde: Introducere - Se va prezenta o scurtă introducere cu privire la problematica abordată, cu precizarea scopului, a obiectivelui/lor cercetarii și a ipotezei/lor de lucru. Material și metodă – această secțiune va descrie metodologia de cercetare utilizată, modul de selecție a eșantioanelor studiate,
criteriile de includere și cele de excludere, metoda, tehnica, programul statistic folosit în prelucrarea datelor etc. Rezultate – în această secțiune vor fi prezentate concis rezultatele obținute, de obicei prin intermediul tabelelor și al graficelor. Se va prezenta statistica descriptivă și inferențială, diferențele dintre măsurători (inițială și finală; între grupul de experiment sau grupul martor etc.). Este obligatoriu să se precizeze nivelul de semnificație (valoarea lui p sau mărimea efectului d), precum și testul statistic folosit. Discuții – se vor preciza aspectele noii și importante ale studiului, interpretarea rezultatelor propriei, în contextul literaturii de specialitate. Concluzii – concluziile studiului vor fi enunțate cu claritate, stabilindu-se o legătură între acestea și scopurile studiului. Referințe - se vor întocmi conform stilului APA (a se vedea Lista referințelor bibliografice).

- Studiile de caz. Sunt rapoarte ale materialelor de caz, obținute în timp ce se lucrează cu o persoană, un grup, ocomunitate sau o organizație. Studiile de caz ilustrează o problemă, indică un mijloc pentru rezolvarea unei probleme; și/sau pun în lumină viitoarele nevoi de cercetare, aplicații clinice, sau aspecte teoretice. În scrierea studiilor de caz, autorii analizează cu atenție echilibrul dintre furnizarea de material ilustrativ important și responsabilitatea asupra materialelor de caz confidențiale.

- Articolele tip eseu/Recenzii din literatura de specialitate (din domeniu Știința Sportului și Educației Fizice, Psihologia Sportului, Pedagogia Sportului, Sociologia Sportului etc.) - vor avea ca structură: Introducere; Nivelul actual reflectat în literatura de specialitate; Problematica abordată; Concluzii; Referințe.

- Recenzii cărți


Exemplu:

According to Suchilin (2010, p.5), the biomechanical criteria are used for dividing the gymnastics elements into parts. Thus, the technical structure of gymnastics elements contains three levels –periods, stages and phases. The Publication Manual of the American Psychological Association was first published in 1929 as a seven-page “standard of procedure, to which exceptions would doubtless be necessary, but to which reference might be made in cases of doubt” (Bentley et al., 1929, pp. 57-58).

Verificați ca fiecare sursă citată să apară atât în corpul textului, cât și în lista bibliografică, iar autorul și anul să fie identificate din punct de vedere ortografic. Lista bibliografică de la finalul articolului științific oferă informații necesare pentru a identifica fiecare sursă. APA solicită ca fiecare listă să fie redactată la rând după, iar elementele din listă să fie indenata începând cu rândul al doilea al fiecărui element (APA Manual, sixth edition). Se vor menționa: autorul (-ii), anul, titlul, editura, paginile, în funcție de sursa citării (carte, articol de revistă, site de internet).

Exemple:

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