



Coping and Sport-motivation of Adolescent Handballers in Debrecen

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Abstract: *The aim of study was to examine coping and motivation of adolescent handball players in Debrecen. Forty-six male and thirty-one female handball players completed the questionnaires, furthermore eighteen male and eighteen females were participated in focus groups. The purpose of this study was to measure gender differences in sport motivation, psychological immune system and athletic coping skills in a population of adolescent handball players. The applied psychological measure method was the Sport Motivation Scale (SMS-28), four subscales of Psychological Immune System Inventory, and the Athletic Coping Skills Inventory (ACSI-28). Results revealed that males have a better self-efficacy and athletic coping skills and have a higher level of intrinsic motivation too. The outcome of the survey confirm that adolescence boys have a better self-efficacy and coping which can be seen on the sport ground as well. Other way focus groups were indicated the measure anxiety on sport ground, the applied coping strategies, and the motivation viewpoints of playing handball at the beginning of the activity and currently. at the Results has showed that at the beginning of playing handball participant have extrinsic motivation (e. g. the stimulation of their parents) but currently the reason of the activity is intrinsic motivation (e. g. health, future). Additionally, during the match there is a significant difference between the perceived anxiety against hard and weak teams at the beginning, in the middle and in the end of the match; furthermore, females have a higher level of anxiety during the match, against hard and weak teams too, but the difference is not significant. Finally, there is no significant difference between males and females in the applied coping strategies and it doesn't have any effects on anxiety.*

Keywords: sport, motivation, adolescent handballers, anxiety, research

Introduction

Nowadays healthcare research is getting more and more attention: there can be seen several calls and commercials on the consequences of unhealthy lifestyle but the advantages of appropriate habits too. This includes balanced nutrition, abstention from harmful addiction and regular physical activity regarding the most important things. In favour of our health it is important to live in a correct way because of the serious effects on our health and mood, namely it influences our present and future as well.

It is necessary to emphasize the importance of regular physical activity and its benefits regarding intrinsic motivation incorporates into the life habit in childhood it is more likely to rest the fondness of sports in adulthood or lifelong. Of course, there are several factors in the background of start to participate in some kind of sport: the promotion of parents and grandparent, a family tradition, friends and peers or personal reason can be influential factor. Otherwise we must emphasize the purport of preventing mental health as psychological preparation is indispensable because of regular physical and psychical pressure, burden of competitions and training.

In our research, firstly we take a brief review of general psychological effects of regular physical activity and consequences linked to anxiety and coping.

Background

Health awareness and sport

On the basis of national and international researches, the conclusion can be taken that physically more active youth feed healthier and smoke fewer, watch TV less and spent free time in a more useful way as well as the risk of obesity is lower (Pate et al., 1996; Pikó & Keresztes, 2007a). Their mood is better compared with non-sporting people and they perceive their health and fitness better thus the sporty behaviour can parallel with better quality of life (Pluhár, Keresztes & Pikó, 2004; Pikó & Keresztes, 2007b).

Positive effects of pursuing sport are well-known. Consequences of sporty lifestyle were the basis of several researches in every field of life. Regular physical activity hides several benefits. Firstly, in physiological aspect regular sport improves the function of cardiovascular system and the flexibility of blood vessels and myocardium, decreases blood pressure, increases capacity of respiratory system, develops coordination of motility system and function of joints, improves the effectivity of immune system, helps to reach and hold the optimal body weight and boosts the function of metabolism and the detoxication (Lénárt, 2002; Gyömbér & Kovács, 2012).

Additionally, psychical context of physical activity is significant as well. Regular physical activity provides a special addition to the personality. During the exercise, it can be gained a huge experience in sport which can be exploited not only on the sport field but in other part of life as well. It influences positively the development of personality and strengthens

health condition. It contributes to development of physical skills and motion system and furthermore it is a type of cultured and beneficial spare time activity which could facilitate working as well (Stuller, 1995).

Mahoney (2005) suggest that sport participation plays an important role in the formation of personality and identity. Children attend themselves, their achievement and competencies in an increased thus activities in which their competencies can improve could be crucial (Mahoney, 2005; Slutzky & Simpkins, 2008).

It can be concluded that athletes have higher self-esteem; even they perceive their self-esteem and self-image better compared with non-athletes (Fletcher et al., 2003; Simpkins et al., 2006). Physically active adolescents are more satisfied with their life and they report less depressive symptom than physically not actives persons. Otherwise a discrepancy can be shown between the attitudes of values too. Whereas athlete adolescents prefer internal values (e. g. self-acceptance, belonging to a group, physical health) than low-activated adolescents find attractive external value (e. g. financial success, favourable appearance, fame) (Pluhár et al., 2004; Pikó & Keresztes, 2007b).

Research has shown also gender differences in practicing sport. Usually boys take part in activities connected to performance more likely than girls and they report a higher self-esteem as well. It can be shown differences regarding the value of exercise as they attribute higher worth to it (Eccles and Harold, 1991; Jacobs et al, 2002, in Slutzky and Simpkins, 2008).

Sport, coping and anxiety

According to coping some conception must be clarified. Anxiety and fear is a normal reaction for menace. The difference between these conception is that in the background of fear stands a well-demarcated menace however anxiety is caused because of an unclear menace. It can be described, as an unpleasant and taut state which is accompanied by a high activation of autonomic nervous system, negative emotions and thoughts (Atkinson & Hilgard, 2005).

Spielberger (1975) states two type of anxiety by duration called state and trait anxiety. State anxiety appears only in certain situations (e. g. on competitions, exams) whereas trait anxiety appears as an inclination, it could be categorized, as the trait of personality (Spielberger, 1975; Orosz, 2009).

Anxiety used to be accompanied by increased level of arousal which predicts sport achievement. Two categories can be determined called debilitating/paralysing and facilitating anxiety. There is an optimal domain in which performance is the best. This domain can be linked to facilitating anxiety. A higher level of optimal arousal is harmful to performance because of disorientating psychical function. This is debilitating/paralysing anxiety (Horváth & Prisztóka, 2005). Partfitt et al. (1990; Marchant & Morris, 2005) claim that athletes are able to interpret anxiety in a positive way. The same extent and intensity of anxiety could have different effect on two different athletes because of individual differences. For ones, it can be facilitating and can improve performance but for others this can decrease performance because of debilitating

(Marchant & Morris, 2005). Research suggests that anxiety and distress leads to decreased performance whereas eustress or higher level of arousal with a sense of control could facilitate success (Landers & Arent, 2001; Orosz, 2009).

The appearance of anxiety can be influenced by different factors. As an athlete, it is easy to come from a relaxed state into a stressed one and vice versa depending on own performance or the perception of the game's context. Furthermore, the intensity of anxiety and the manifestation of signals are different by different participants and different situation. Type of sport could also influence the level of anxiety according to difficulty, duration and type of task (e. g. individual or team sport, direct or indirect conflicts in the situation) (Marchant & Morris, 2005).

It is necessary to mention the term of stress which means the threat of homeostasis and causes the upset of it. The emphasis is on lose control. Solution can be found in adaptive behavioural and psychological response. Selye (1963) said that physical and psychical burden leads to stress reaction of organisation which contributes to adaptation. Stress can be defined as a specific response of organisation for its threat.

Stressors can be classified according to the intensity of stimulus's effect. Lack of incentive and exaggerated incentive can be stressful as well (Selye, 1963). If the intensity of stimulus is too low, the result will be boredom which leads to lower performance. Contrary, too much or too intensive stimulating leads to paralysis which causes depressed performance as well. Common characteristic of stress states is improvement of arousal which has an adverse effect (Landers & Arent, 2001).

Coping is the way of reaction for stressful situations. During life there are lots of situation, the reaction, pursuit and solution for coping is individual. The behaviour is the result of dynamic interaction between person and environment according to Lazarus cognitive theory of stress. Evaluation is individual and subjective. Evaluation of stimulus (how threatening the situation is perceived) is individually different. Way of coping can be considered as a result of cognitive assessment (Oláh, 2005).

Psychological Immune System is linked to coping. This includes sources of personality which make person able to endure permanent stress and cope with threats efficiently (Oláh, 2005). This happens without injury of integration of personality, effectiveness of functioning and developmental potential. It can be defined as an active protection which activates in every situation when an obstacle gets on integration of psychical functioning or something threatens individual's psychological development or realization of its goal or a factor against life functioning (Oláh, 2005). Subsystems of Psychological Immune System (approach beliefs, monitoring-creating executing beliefs and self-regulating beliefs) operate in dynamic interaction guaranteeing flexible organisation and adaptation thereby also enriching personality. A person with poor psychological immunity can come into a pathological state but the result of strong psychological immunity could be health and absence of symptoms (Oláh, 2005).

Regarding coping strategies two types can be categorized: positive and negative coping. Positive coping – e. g. sport, relaxation, humour, laughing or crying doesn't have any side effects but negative coping – e. g. alcohol, drug or eating - does have some kind of side effect (Kopp & Skrabski, 1995).

Sport is a positive coping strategy because sport – pursued in an appreciate way – can reduce stress, restore balance of organisation and does not cause any side effects. The emphasis is on appreciate pursuing because exaggerated sport participation can lead to training addiction.

It is important to research coping during sport participation because of numerous burden of athletes. First, expectation of coach is a big pressure. In higher level (in case of official athletes) pressure from the manager must be mentioned as well. In adolescence expectation from school and parents are important too. These burdens could annoy function of nervous system, create problems in decision making process, and can decrease achievement (Frederick & Ryan, 1993; Kyprianou, Sipos & Stravos, 2009).

Kyprianou et al. (2009) measures Cypriot footballers' coping and anxiety and diagnosed that adolescents compared with adults achieve significantly lower performance in concentration, coping with disadvantageous situation and coping in sport, although regarding anxiety no significant differences could be seen. This result highlights the importance of appropriate psychological training in adolescence for developing coping.

Regarding imaginary techniques and effectiveness of coping strategies Omar-Fauzee et al. (2009) thought that these two mental abilities influence athletes' successful performance. They tested primarily Malay athletes in more kind of sports (football, futsal, volleyball, basketball, rugby, swimming, ice-hockey, archery, etc.) and in different levels (regional, national or international level). Results show significant differences according to sport levels in utility of imaginary techniques and sport coping. Athletes in the highest level (international athletes) has better performance in both task compared with other levels.

Sportmotivation

Sport motivation is an important factor in regard of sport participation. The reason of commitment to pursue sport can be different and individual. It is significant to emphasise the relevance of regular physical activity because adopting the value of sport in childhood can lead to regular activity in adulthood more likely.

Regarding the background of sport participation intrinsic and extrinsic motivation can be categorized (Horváth & Prisztóka, 2005). In case of intrinsic motivation person does sport because of the activity itself because it means a pleasure and a reward for athlete as well. This is the strongest and the most long-lasting motivation factor. Aims of athletes with intrinsic motivation are competence, self-determination, excellence, success and pleasure of sport exercise itself. Reaching these points, they become rewards to. Regarding extrinsic motivation, the necessity of pursuing sport comes not from the person but from an external factor, e. g. money or financial reason. The environment has an important role (parents, siblings, friends, classmates, teachers etc.) and media (television, radio, newspapers and magazines, sport events, commercials etc.). Extrinsic motivation can be created from praise and discipline too, reward (public recognition, money, medal, and certificate) and punishment (harder training, deprivation of earlier reward) but it is necessary to lay down that this

kind of motivation is short-term and not so effective. In this case cessation of internal motivation can lead to drastic decrease of performance so reach of internal motivation is more desirable.

Level of motivation is an influential factor in sport achievement, it has an optimal level. Unsatisfactory level of motivation impedes achievement while attention focuses not only on moving. Overmotivation is not ideal too because it can be linked to high inquietude and if it is connected with anxiety it creates fear from failure which leads to reduced performance too. Ideally level of motivation is not too low but not too high as well (Horváth & Prisztóka, 2005).

An athlete with intrinsic motivation has better self-esteem and life quality (Standage & Gillison, 2007), is more persistent (Pelletier et al., 2001) and has sport relationship with higher quality (Vallerand & Losier, 1994). Intrinsic motivation is connected with higher level of everyday well-being (Gagné, Ryan & Bargmann, 2003) and risk of burnout is depressed too (Cresswell & Eklund, 2005).

Age is an influential factor regarding sport motivation. The motivation of younger athletes typically comes from intrinsic motivation: entertainment and fun, possibility of developing skills or challenges are in the background (Buonamano, Cei & Mussino, 1995; Gill, Gross & Huddleston, 1983; Frederick-Recascino & Morris, 1995). In front of them, among adults intrinsic motivation factors can be detected as well but in the background there are mostly extrinsic factors like fitness, reduction of stress or protection of ideal body weight (Gill et al., Martin, 1996; Mathes & Battista, 1985). Regarding elder people, these assignments are valid as well but doing regular physical activity because of an existing health problem can be categorized as intrinsic motivation (Morris & Han, 1991; Ryan et al., 1997). *Bengoechea and Streat* (2006) determined five points according to adolescent sport motivation. These are:

- take care as support (physical, information, emotional, support in challenges and assessment, social and autonomous support);
- other as source of compulsion and control (compulsion of participation and achievement and style of control);
- peers are relevant source of information according to achievement (social assessment and comparison);
- peers are representatives of socialisation of achievement orientation (representatives of achievement orientation and control orientation);
- peers are models of competition.

Stuller (1995) claimed 12 motivation factors regarding athletes in age between 8 and 35 years. The most important factor seemed self-realization, health, body, power and dexterity developing effect of sport. Other factors influencing motivation were experience, moving desire, fun, useful pastime, competition and desire to win, vanity and pride, boast of own nation, peer communities, habits and passion. Regarding the role of age differences are shown in motivation: motive power of athletes between 8 and 15 years old were mostly to become more skilful and strong whereas motivation between ages from 18 to 25 years seemed rather aspiration to achieve and reach goals.

Neulinger (2009) investigated free time physical activity among 15 and 69 years-old people on a representative sample. Result of her study showed reach and guard good performance (81 %) and recreation and entertainment (81 %) the most important motivational factors, like love of pursuing sport (78 %). Good community (66 %), coping with stress (63 %), exercise of friends (56 %), competition and victory (30 %), encouragement from parents (19 %), expectation of workplace (11 %) were other factors. Regarding gender differences could be shown. The most important point of women, were body mass control (86 %), reach and guard good performance (80 %) and recreation (78 %) whereas for men reach and guard good performance (86 %), recreation (83 %) and good community (83 %) were the most influential incentives.

Matthes and Battista (1985) stated other differences in motivation regarding gender. Among women stand social experience, stress reduction, sense of affiliation and group cohesion in the background of regular exercise while among men the most dominant factors are competence-based motifs. This means for women dominate extrinsic factors but for men intrinsic factors.

Research of *Frederick and Ryan* (1993) showed achievement based intrinsic motivation more typical for men but extrinsic motivation linked to physical attraction and appearance for women. No significant differences between men and women were detected in achievement motivation but it was laid down that men are influenced rather by intrinsic and women preferably by extrinsic incentives.

Method

Hypotheses

Regarding literature the question is how sport influences anxiety, psychological immune competence and coping and what kind of motivational factors are in the background of pursuing sport. We had several hypotheses:

H1: Significant differences can be detected in function of psychological immune system, coping in sport and motivation regarding gender (*Frederick és Ryan, 1993, Marchant and Morris, 2005*).

H2: At the beginning of activity athletes are influenced sport participation rather by external factors while at the time of investigation by internal factors (*Standage and Gillison, 2007*).

H3: Anxiety on playground shows a different pattern against weaker and harder teams, level of anxiety is lower against a weaker team compared with harder teams (*Kyprianou et al, 2009*).

H4: Gender differences can be detected in anxiety, level of anxiety is lower in men compared with women (*Frederick and Ryan, 1993*).

H5: Gender differences can be seen in strategies used to reduce level of anxiety on playground (*Omar-Fauzee et al, 2009*).

H6: Significant differences can be detected in level of anxiety according to coping strategy (*Omar-Fauzee et al, 2009*).

Participants

In present study sample includes adolescent athletes, more precisely handball players. Six team participated in the study: three men's and three women's team. All of them are official handball players, girls are member of DVSC and boys are members of DSC-SI (Sport Centre and Sport School of Debrecen) or DEAC (Athletic Club of University of Debrecen). They contend regularly, compete in national youth championship (ERIMA or OSB). Some of them is member of youth handball team.

Participants were born between 1998 and 2001 so their age is between 13 and 16 years. 77 athletes took part in test filling, 46 boys and 31 girl. In focus groups took part six member of all teams, altogether 36 person (18 boys and 18 girls). Mean of participants' age was 14,5 years, regarding girls it was 14,9 years and regarding boys 14,2 years.

Measures

Questionnaires

Three questionnaires were used to measure coping and sport motivation. First acceptance of parents was asked regarding participants were infants.

Hungarian version of *Athletic Coping Skills Inventory* (ACSI-28, Smith, Schutz, Smoll & Ptacek, 1995) was used to measure coping, a 28-item scale linked to personal experiences of athletes. Participants have to decide how typical statements are on a four degree Likert-scale.

Hungarian version of *Psychological Immune System Inventory* (PISI, Oláh, 2005) was used to measure general coping. The questionnaire has 16 subscales but in present study four of them were used: self-efficiency, positive thinking, sense of self-growth and self-respect where participants have to rate statements on a four degree Likert-scale.

At least hungarian version of *Sport Motivation Scale* (Pelletier, Tuson, Fortier, Vallerand, Brière & Blais, 1995) were used to measure motivation of athletes. Participants have to rate statements on a seven degree Likert-scale.

Focus groups

In the second part of the study focus groups were made to precise measurement. Theme of conversation was linked to testes as it includes sport motivation and anxiety and coping on playground. According to these, talk had three main parts:

1. *Sport motivation*: collecting reasons behind pursuing sport (at the beginning of playing handball and now of research).
2. *Anxiety on the playground*: depiction of anxiety appears on playground (at the beginning, in the middle and at the end of match) on a diagram and assessment of it on a scale form one to five.
3. *Coping with anxiety*: used strategies to eradicate anxiety and usage of these strategies on other field of life.

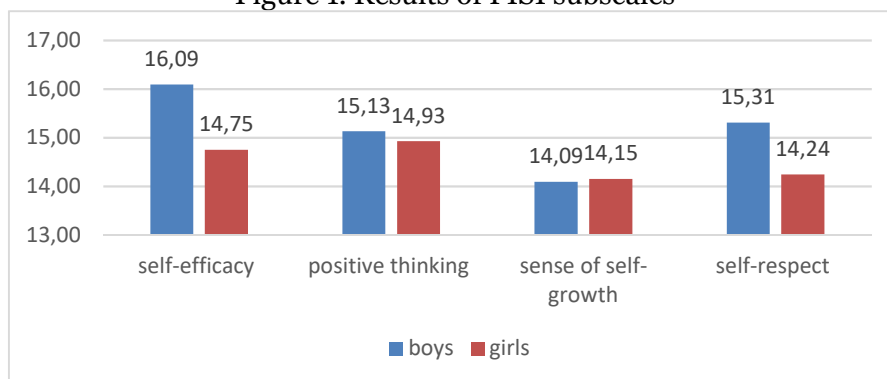
Duration of conversations were between 24 and 40 minutes. Girls usually worked slower but mentioned more points and explicated them more precisely.

Results

Excel was used for electronic recording and R-Gui statistic program was used for interpretation of data. Each test began with a normality test (Kolmogorov-Smirnov).

In the *first hypothesis* we supposed regarding literature review that gender differences can be seen in function of psychological immune system, athletic coping and sport motivation. Regarding psychological immune system in self-efficacy was showed significant difference ($p=0.009242$), boys' opinion about their self-efficacy was higher compared with girls. As this is part of self-image and in adolescence boys have better self-esteem this result confirms earlier studies. On the other hand, positive thinking ($p=0.7141$), sense of self-growth ($p=0.9155$) and self-respect ($p=0.1208$) didn't showed significant differences in gender.

Figure 1. Results of PISI subscales



Regarding athletic coping mean of boys' score was 84.23 while mean of girls was 77.18. Two sample t-test showed significant difference between the groups ($p=0.001958$).

More precisely on three subscales could be seen significant difference namely on coping with adversity ($p=0.002402$), freedom from worry ($p=0.01529$) and confidence and achievement motivation ($p=0.002657$) boys reached significantly higher score but on other scales no significant differences could be detected. To sum we can appoint that boys have better athletic coping compared with girls.

At least significant differences in sport motivation can be stated as well because of significantly higher score of boys. Regarding scales significant differences could be determined in intrinsic motivation ($p=0.0117$) whereas this could not be diagnosed in case of extrinsic motivation ($p=0.981$) and amotivation ($p=0.6133$). This means that boys and girls don't differ regarding extrinsic motivation and amotivation, but intrinsic motivation seemed significantly more important for boys.

In the *second hypothesis* we supposed that time dimension of sport participation (then and now) is related to location of motivation (external

and external) so at the beginning of handball playing athletes pursued sport rather because of external factors while now of study, because of internal factors (according to focus groups). First, we totalized answers from conversations with analysis of content. Accordingly, we categorized earlier and current motivational points separately, and intrinsic and extrinsic points were distinguished as well. Categorisation can be seen in *Table 1*:

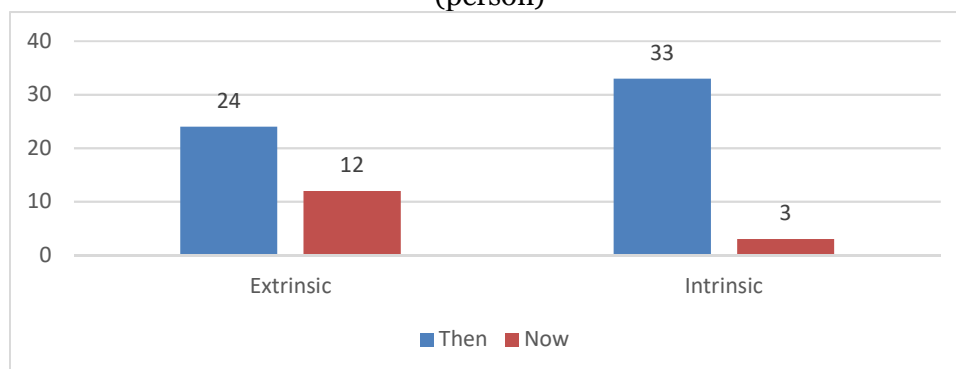
Table 1. Extrinsic and intrinsic points in motivation

| | | | | |
|---|-------------------|--|---|--|
| T H E N | INTRINSIC | because of other person | peer (friend, classmate, sibling) | |
| | | | reference person (parents, grandparents, other coach) | |
| | | sport programs and events (talent programs, matches) | | |
| | need for movement | | | |
| | EXTRINSIC | it was sympathetic | | |
| | | dexterity (“I had a good sense”) | | |
| need for pursuing sport (“I’d like to sport”) | | | | |
| health, shape (“I was fatty”) | | | | |
| future (“ I thought with pursuing sport I’ll have a good future”) | | | | |
| N O W | INTRINSIC | parents (“to show to my parents”) | | |
| | | team, community, mood | | |
| | | because of the other gender (“because of the girls”) | | |
| | | because of the school (“we must choose something) | | |
| | EXTRINSIC | hobby, free time activity | | |
| | | love of sport, enjoyment of game | | |
| | | goals, future, “this is our life, not only a hobby” | | |
| | | health, fitness | | |
| | | reducing stress | | |
| | | adrenalin, pace | | |
| | | compulsion of sport | | |
| | | habit | | |
| | | energy put in so far | | |

From the table we can see that children in both cases thus at the beginning of sport participation and at the time of investigation named more reasons of sport linked to intrinsic motivation then to extrinsic motivation. According to focus groups the question arises whether beginner and actual sport motivation is different therefore at the beginning of sport participation children started to play handball because of different reasons while now they are motivated by other factors in pursuing sport.

To test the hypothesis first we summarized for how many children was typical intrinsic and extrinsic motivation and what was the distribution of motivational factors at the beginning and currently. These factors were categorized according to mentioned aspects in focus groups therefore which type was named more, dominantly. This is presented in following graph:

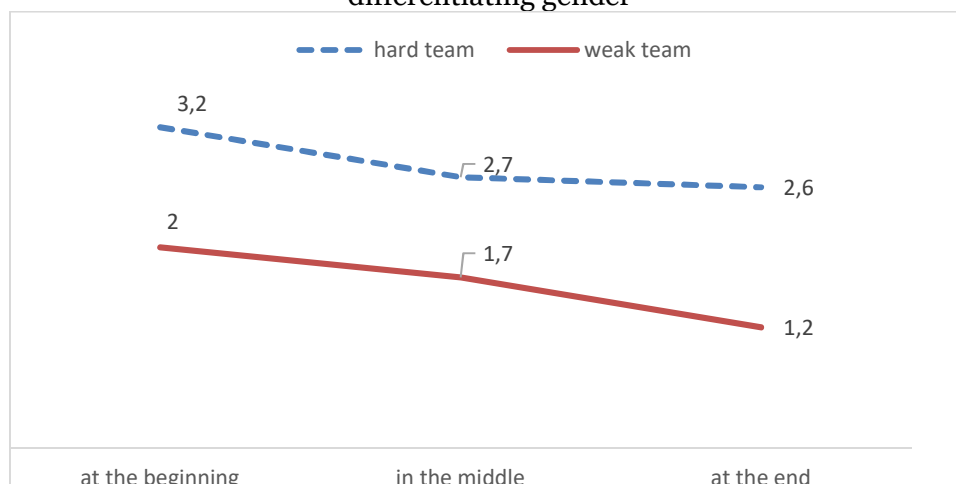
Figure 2. Distribution of extrinsic and intrinsic sport motivation then and now (person)



For first view a notable difference can be detected. It can be seen on the diagram that at the beginning of playing handball extrinsic motivational factor were linked to 24 athletes from 36 participants while intrinsic motivation can be categorized in 12 participants. Therefore, the distribution of extrinsic and intrinsic motivation in this sample was 2/3 and 1/3. In comparison regarding current sport motivation we could say that extrinsic motivation dominated only in 3 participants while tendency of intrinsic motivation was seen in 33 athletes as we could say that the distribution was 1/11 and 11/12. Results of chi-squared test showed a significant difference regarding this distribution ($p=1.131e^{-13}$). Fundamentally it can be allocated that at the start of sport participation children were motivated in playing handball rather because of extrinsic motivational factors while now pursuing sport and playing handball became controlled by intrinsic factors.

In the *third hypothesis* we thought that level of anxiety shows a different pattern against weak and strong opponents, it is lower against weak teams compared with strong teams. According to focus groups perceived level of anxiety explained by children is shown on the following diagram (without differentiating regarding gender):

Figure 3. Average level of anxiety against weak and strong teams without differentiating gender



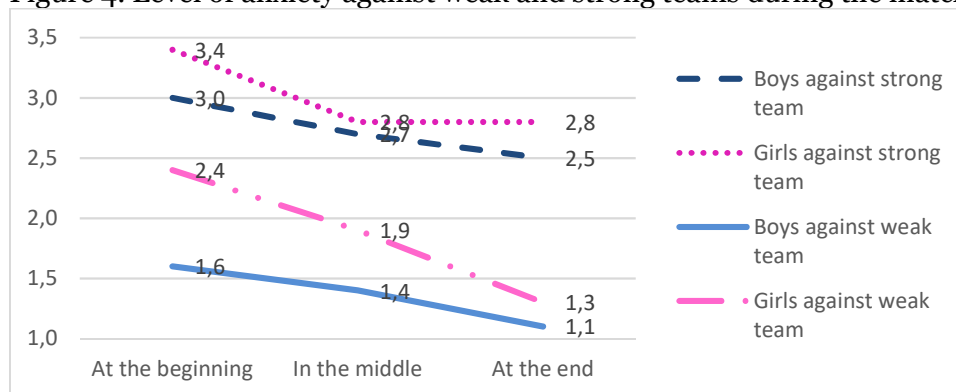
Because of the not normal distribution of the sample Mann-Whitney probe was used to test the hypothesis. At the beginning of match the

difference of perceived level of anxiety was significant regarding type of opponent ($p=6.567e^{-05}$). This result could be claimed in the middle ($p=2.5e^{-05}$) and at the end of the match too ($p=1.901e^{-06}$). Therefore, level of anxiety appeared lower against weak opponents in all cases compared with strong opponents.

Our *fourth hypothesis* was completed to previous one in which we thought that gender differences can be experienced in level of anxiety appearing on playground and boys are less likely anxious than girls regarding weak and strong opponents as well. According to the results of Mann-Whitney probe it can be stated that at the beginning of match in case of playing against some weak team girls are significantly more anxious compared with boys ($p=0.03340$). In the middle of the match the perceived level of anxiety is higher among girls, but the difference was not significant ($p=0.08713$) and the same result could be laid down at the end of the match ($p=0.3506$).

Like previously, in case of fighting against a strong team the level of anxiety perceived on the playground was higher among girls however the difference was not significant neither at the beginning ($p=0.3001$), nor in the middle ($p=0.7593$) or at the end of match ($p=0.5264$). Means of girls' and boys' anxiety are illustrated in Figure 4.

Figure 4. Level of anxiety against weak and strong teams during the match



Basically, it can be allocated that girls' level of anxiety is higher in all cases compared with boys against weak and strong opponents as well, but the difference is not significant.

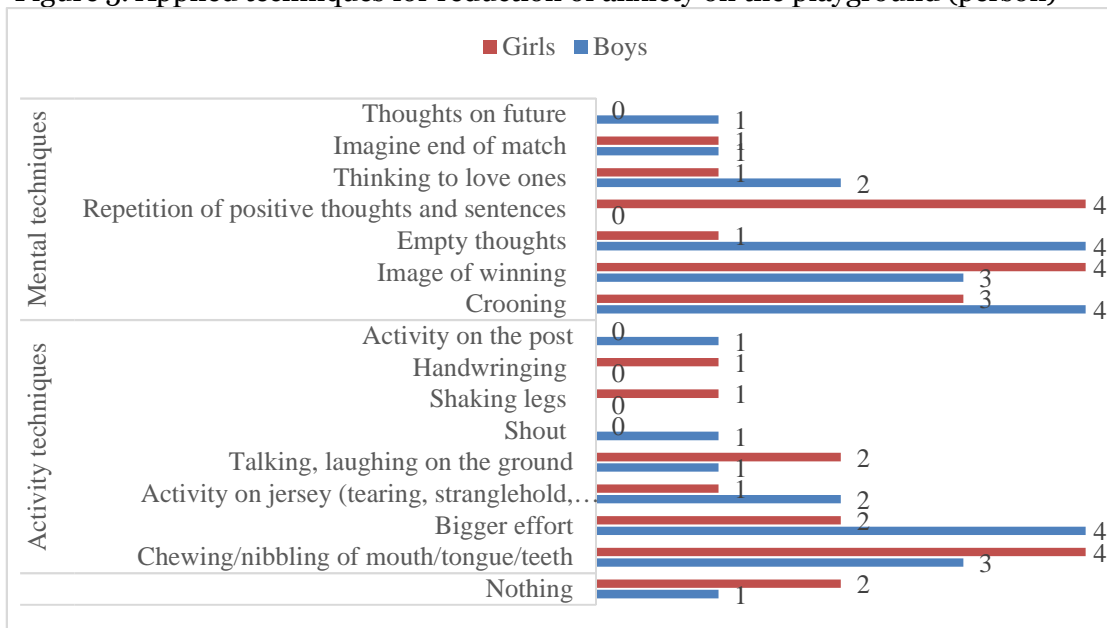
In our research we focused on children's anxiety reducing techniques too. In the *fifth hypothesis* we supposed that gender differences can be detected in usage of anxiety reducing techniques. We summarized the answers of children and more groups were categorized with content analysis, first without having regard on gender. Children had the possibility to mention more methods, mental and activity techniques as well. If more type of methods were named, classification was made according to the dominance as which type was referred more times. Techniques can be seen in Table 2 with number of person preferred each category:

Table 2. Applied strategies to reduce level of anxiety on the playground (content analysis)

| <i>Mental techniques</i> | <i>Activity techniques</i> |
|--|---|
| <ul style="list-style-type: none"> • Crooning (7) • Image of winning (7) • Empty thoughts (5) Repetition of positive thoughts and sentences (4) <ul style="list-style-type: none"> • Thinking to love ones (3) • Imagine end of match (2) • Thoughts on future (1) | <ul style="list-style-type: none"> • Chewing/nibbling of mouth/tongue/teeth (7) • Bigger effort (6) Activity on jersey (tearing, stranglehold, nibbling) (3) <ul style="list-style-type: none"> • Talking, laughing on the ground (3) <ul style="list-style-type: none"> • Shout (1) • Shaking legs (1) • Handwringing (1) • Activity on the post (1) |

After this phase answers were categorized to investigate connection between gender and applied strategies applied to reduce anxiety during the match. Distribution of these methods regarding gender are shown in Figure 5:

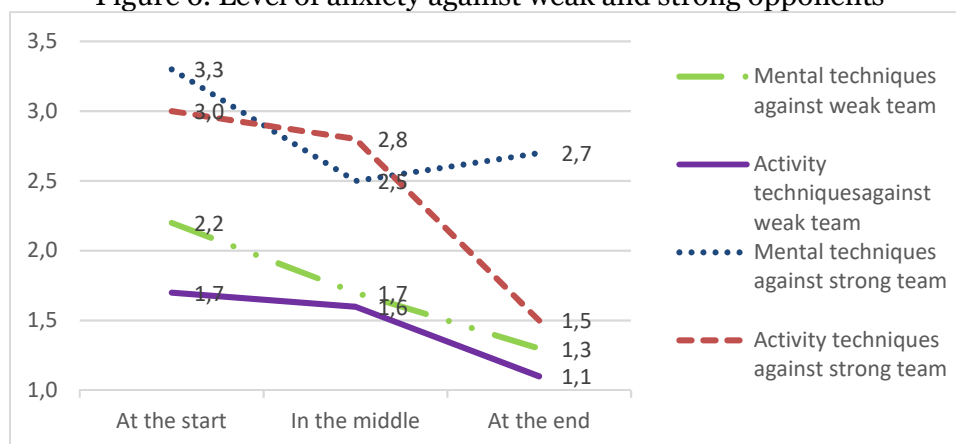
Figure 5. Applied techniques for reduction of anxiety on the playground (person)



Chi-squared test was used to measure differences in the distribution. Three participants don't apply any kind of strategy, they were ignored from testing thus evaluation was made with 33 athletes. Regarding anxiety reducing techniques 8 boys use mental techniques while 9 of them use activity techniques thus distribution is 8/17 and 9/17. Among girls 9 participants use mental techniques while 7 of them apply activity techniques thus the distribution is 9/16 and 7/16. As we can see girls prefer mental techniques while boys prefer activity techniques. However, results of chi-squared probes did not show significant differences in this distribution ($p=0.608$) thus it can be stated that no significant differences can be seen in usage of coping strategies regarding gender.

Last in the *sixth hypothesis* we supposed that significant differences can be detected between athletes using different coping strategies (mental and activity techniques). Results are demonstrated in Figure 6:

Figure 6. Level of anxiety against weak and strong opponents



Against weak team level of anxiety was higher during the match in athletes using mental techniques compared with participants using activity techniques. At the beginning of match the difference between the two groups was significant ($p=0.0495$) as mental methods' users were more anxious but no significant differences have been shown in the middle ($p=0.5978$) and at the end of match ($p=0.7384$).

Regarding matches against strong teams the level of anxiety was higher at the beginning and at the end by athletes applying mental techniques but lower in the middle. Therefore, according to Mann-Whitney probe differences were not significant in these cases, neither at the beginning ($p=0.2141$), nor in the middle ($p=0.4887$) or at the end ($p=0.5966$). Basically, no significant differences could be detected in perceived level of anxiety between mental and activity techniques' users only against weak teams at the beginning of the match. Coping of athletes applying activity strategies seems to be more effective compared with athletes applying mental strategies however the difference is not significant thus this is only a tendency

Discussion

Firstly, the aim of the study was to meet psychological state of target group, monitoring gender differences and precise data collecting with profound investigation with focus groups. Results of the study confirm the phenomenon according to age that boys have better self-esteem and coping in adolescence. They draw attention to differences regarding gender which must take into account during development of children.

Furthermore, it is an important fact regarding psychological training that the motivational reason can be different at the beginning of sport participation and later as pursuing sport – in this case handball – become controlled rather by intrinsic motivational factors with years. Otherwise parents still play an important role in an adolescent's life as they are

supportive basis for young athletes. Naturally, the role of the coach is prominent as coach is required to develop self-esteem of children or reduce level of anxiety in trainings and sport events which can lead to better performance. Excavated connection can be helpful for parents and coaches to solve problems more efficiently while they are still important part of the mechanism as external motivators.

These motivational factors can help young athletes to further sport participation. Children can be confirmed that it is rewarding to pursue sport because of external and internal factors as well and they can be committed in participation with setting new targets which also strengthen intrinsic motivation. If an athlete loses motivation or does not see the sense of activity, reviving previous points can be able to motivate them for further sport participation, finding new factors.

Beforehand it was expectable and our research has affirmed it that children's pattern of perceived anxiety is different against weak and strong teams. During the training this must be regarded and children need to get learnt how to treat with anxiety in different situations. Naturally, gender differences can be claimed as level of anxiety is higher among girls. This is linked to usage of coping strategies which is individually different as well. A tendency has been shown that activity strategies are more effective in depressing anxiety. Learning appropriate techniques contributes to better performance. This must be emphasized as children in this age are affected by several expectations from more fields which can be burdening and decrease young athletes' performance and even their mental health. Furthermore samples and strategies adopted adolescence are more likely to get used in adulthood as well.

Conclusion

Present study is focuses on effects of sport on anxiety, psychological immune system, coping skills and motivation among adolescent athletes. According to results gender differences can be seen in all of measured factors while boys' psychological immune system and athletic coping is more effective compared with girls, and boys' intrinsic motivation is higher too.

It is an important result that at the beginning of sport participation children play handball because of extrinsic motivation but it became to intrinsic motivation with years. This means that time dimension of pursuing sport (how many years the athletes participate in sport activity) and motivation is in connection.

Adolescents' perceived level of anxiety shows a different pattern in matches against weak and strong teams, athletes are more anxious against strong teams during the whole match and a tendency has been showed that girls are more anxious but not significantly.

Regarding used coping strategies mental and activity anxiety reducing techniques can be detected. Results showed that no gender differences can be seen in distribution of usage of these methods but a tendency was appeared that depressing anxiety was more effective among activity techniques users (not significantly). This result is important regarding that

adopting appropriate methods to decrease level of anxiety can lead to better coping as well.

This research is an excavating investigation which puts the emphasis on necessity of psychological training among athletes. It highlights the positive effects of sport on self-conception. This determines adolescents' further mindset and development thus it is important to emphasize that sport is an effective factor in development of self-esteem, coping and reduction of anxiety. Present experiment highlights on necessity of psychological training among athletes because of development of their personality and achieving better performance. Furthermore, necessity and importance of applying deeper information elaboration methods as focus groups are highlighted as well.

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