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SPORT, SENSE OF COHERENCE, AND SELF-ESTEEM AMONG 16 AND 17-YEAR-OLDS

The study investigates the health-preserving role of sports among 16 and 17-year-olds in the context of sense of coherence (SOC) and self-esteem (SES); revealing their interdependencies, it intends to contribute to discovering the protective factors of health. In Hungary's Southern Transdanubian region, we implemented a health-sociological questionnaire survey on a 1091-person sample representing school types, during which we thoroughly researched young peoples' sporting and physical training habits, measuring their sense of coherence with the 13-item SOC scale and their self-esteem with Rosenberg's 10-item scale. The frequency and level of physical training in both sexes (controlled by parents' education and work, place of residence, and school type) indicated a strong positive correlation with SOC and SES, with meaningfulness as the most significantly connected dimension of SOC. The scale values were significantly higher with boys than with girls. The survey results also mark the significance of internal motivations for sports.

Keywords: adolescence, sport, coherence, self-esteem, sex

Sport – Kohärenzgefühl – Selbstwertgefühl der 16 und 17 Jahre alten Jugendlichen: Die vorliegende Studie untersucht die gesundheitsfördernde Rolle des Sports unter 16–17 jährigen Jugendlichen im Kontext von Kohärenzgefühl (SOC) und Selbstwertgefühl (SES). Ziel der Untersuchung ist – durch Erschließung gegenseitiger Abhängigkeiten –, zur Erforschung der gesundheitsfördernden Faktoren beizutragen. In der Region Südtransdanubien wurde eine gesundheitssoziologische Erhebung in einem Sample von 1091 Personen durchgeführt, in der Jugendliche besonders nach ihren Gewohnheiten beim Sport und ihren physischen Aktivitäten befragt wurden, desweiteren wurden dabei ihr Kohärenzgefühl mit der SOC-Skala (13 Items) und ihr Selbstwertgefühl mit der Selbstwert-Skala von Rosenberg (10 Items) erfasst. Die Häufigkeit der und das Maß an physischer Aktivität korrelieren bei beiden Geschlechtern mit SOC und SES stark positiv, wobei die Aspekte Ausbildung, Beruf der Eltern und Schultyp kontrolliert wurden. Die stärkste Korrelation besteht mit der „Sinnhaftigkeitsdimension" von SOC. Die Werte, die mit diesen Skalen gemessen wurden, waren bei Jungen signifikant höher als bei

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Mädchen. Die Ergebnisse der Forschung machen auf die Bedeutung der inneren Motivationen zum Sport aufmerksam.

Schlüsselbegriffe: Adoleszenz, Sport, Kohärenz, Selbstwertgefühl, Geschlecht

1. Introduction

The most ancient cultures – the Greeks for example – had already recognised the wholesome influence of physical training on the bodily as well as mental functions. In modern societies, however, especially in the most recent decade, in relation with an ever widespread use of the internet, regular physical training has been drastically reduced and was pushed into the background even among younger age groups (PIKÓ & KERESZTES 2007).

The present study investigates the health-preserving function of training specifically among 16 and 17-year-olds in the context of their sense of coherence and self-esteem. Adolescence is a critical age of life; it is the time when identity is formed. From the aspect of developmental psychology, it is characterised by two contrasting tendencies. On the one hand, an increased need for autonomy can be observed, which is manifested, first of all, in the form of efforts to become independent of the parents. On the other hand, same-age groups gain more and more significance, indicating the appearance of the need for a different intimacy (BEYERS et al. 2003). This period of life is characterised by family conflicts and performance pressure in school (STAUDER 2008). All these are paired with social influences that are the products of the present 'developed' society. As a result of reduced social ties, fewer social sources exist to help adolescents fight the new challenges (STEINBERG 2006).

According to 'Stress in America', the generational survey of the American Psychological Association carried out in 2012, it is the millenary generation (18 to 34 years) – compared to older generations – that experiences the most stress. 39% of these people state that in the last year, stress increased in their lives (www.stressinamerica.org).

This tendency can be observed in Central European countries as well, and possibly continues to exist. For those who live in Western civilised societies, the main conflict source appears to be societal-social interactions. Characteristically, there is simultaneously more than one stressor present. This is also true for the age of adolescence when, in the case of the researched population, experiencing adolescence itself is already a source of conflicts.

According to Aaron ANTONOVSKY (1987), the main function of the organism is to fight the state of tension generated by challenges and stressors. If the fight is successful, the pressure has a decidedly health-protecting and health-developing effect; that is, the tension only becomes destructive to health if the attempts to fight it have failed (KONKOLŸ THEGE 2008).

The main factor leading to a loss of balance is the exhaustion of power sources, which also depends on the general physical state. Sport is not only a means of pre-

serving physical health but a protection factor which essentially improves the quality of life in every age of life, and influences almost all areas of life (BIZE et al. 2007).

2. Background

2.1. Sense of coherence (SOC) as an important determinant of health

In the centre of salutogenesis – as opposed to pathogenic orientation – the main factors are not the ones threatening peoples' physical-mental health but the ones protecting and developing it. It has three main elements: *comprehensibility*, which is formed on a cognitive level, according to which the individual understands the events happening to them and is capable of interpreting them; *manageability*, which is manifested on the level of behaviour, possessing which they can adequately react to events and occurrences; as well as *meaningfulness*, the acceptance of the fact that the life events happening to them have significance, meaning, and they consider it important to master them.

ANTONOVSKY considers sense of coherence as a positive source of mental health. According to the author, sense of coherence as a disposition (or rather habit) is a power source, which, at a high level, enables one to successfully fight stress effects. It promotes mastering the individual's own power sources, and the capacity to recognise external and internal influences, the strength to handle the pressure heaping onto him/her, and the ability to fight these (1987).

In the period following the publication of Antonovsky's original volume, several studies have proved the strong connection between sense of coherence and health (ERIKSSON & LINDSTRÖM 2006). A strong connection between SOC and mental symptoms like anxiety and depression was also reinforced by BLOM and colleagues (2010). Beyond mental health, sense of coherence is a protection factor against several states of chronic disease (SURTEES 2003; SIMONSSON 2008).

The surveys carried out among adolescents indicate a connection between SOC and health which is similar to the results measured in the case of adults. Strong SOC is connected to positively experienced health by BUDDEBERG-FISCHER and colleagues (2001); ERIKSSON and LINDSTÖRM (2006); NIELSEN and HANSSON (2007).

2.2. Self-evaluation, self-esteem

An important component of our self-image is self-esteem or self-confidence. The short definition of self-image is the person's mental representation of their own qualities, social roles, past experiences, future purposes; that is, self-image is a person's knowledge and evaluation of themselves, their emotions concerning themselves (PIKÓ 2005b).

Our self-image is not a rigid, static system but a living, dynamically changing representation, continuously created and changed by the individual, adapting newer information into their self-image, through which their self-characterisation is transformed.

It is a widely held view that positive self-esteem has several advantages. Those who possess a higher level of self-esteem are presumably psychologically healthier and happier (TAYLOR & BROWN 1988).

2.3. Sport as a protection factor and its inner motivations

Physical training has a significant effect on mental health by influencing life quality. On the one hand, depressive and anxiety-type conditions are less frequent among people who regularly pursue sports (MEEUSEN 2005); on the other hand, sport as a means of therapy can be successfully applied in the case of patients with depression or anxiety.

Among the psycho-social effects of regular sport, its confidence-developing quality and contribution to forming a positive way of thinking is of a marked importance. It enhances the forming of the sense of competence, autonomy, inner control, and self-determination (NTOUMANIS 2001).

In our times, besides the increasing number of risk factors, the lack of protection factors such as sport is typical. Sport contributes to forming resilience (mental immunity, mental resistance) (VARGA et al. 2009). This does not mean that the individual becomes stress-resistant but it promotes fighting the harmful effects that stress causes as well as regeneration after difficult situations.

There are multi-level sources that can contribute to the forming of resilience: social factors and individual characteristics that are partly genetically defined and partly formed in the course of socialisation. Out of these, we have to stress self-esteem, tolerance towards negative events, and future-orientedness (PIKÓ 2005a). The latter two also belong to the components of SOC. That is the reason justifying why we examine the effects of sport in the system of connections of self-esteem and SOC.

For a long-term positive attitude towards sport to be formed, we considered it important to learn about inner motivations that influence the attitudes concerning sport, and produce a very strong behavioural intention.

Therefore, in the course of our survey, we also asked questions about motivations.

2.4. Sex differences

2.4.1. In self-evaluation

According to some assumptions, self-evaluation of men (boys) and women (girls) develops from partly diverse sources. In the self-evaluation of men, it is the success

or failure of independence efforts that can be partly determining, whereas in the self-evaluation of women, it is the success or failure of bonding with others and forming mutual dependencies (JOSEPHS et al. 1992).

2.4.2. In handling stress

TAYLOR and associates (2000) use a similar argument: according to them, diverse, evolutionally selected stress-handling strategies characterise the two sexes. Men dominantly apply the 'fight or flight' response, whereas women prefer the 'tending-befriending' strategy. Corresponding to this, women rely more strongly on the social net surrounding them in cases of stress, so the relative lack of social support might be paired with less favourable health indicators compared to men (TAYLOR et al. 2000).

Comparing the two sexes, self-acceptance in the case of women can be more powerfully influenced by social support and feedbacks from their companions.

3. Method

3.1. Sampling method

The survey was carried out in the circle of students attending schools of the Southern Transdanubian region between January and June 2012. Within the region, we took a representative layered random sample for the type of settlement (number of inhabitants > 100 000, 30 000–100 000, or < 30 000) and for Hungarian secondary school types in the 16 and 17-year cohort, carrying out an (anonymous) self-completed questionnaire-survey with the participants. The Central Office of Statistics and public education data provided the basis of choice. The students filled out the questionnaires in groups, in the frame of a class training in the chosen school types. Every student in the respective classes was included in the sample, which means 1200 persons altogether. The proportion of responses was 90%. Two questionnaires were impossible to evaluate because more than 50% of the questions were left unanswered. The questionnaires of 587 boys and 504 girls could be evaluated, among whom 54.3% were 16 years old and 45.7% were 17 years old (*Table 1*).

3.2. Standardised research methods

3.2.1. Sense of Coherence Scale

We used a 13-item version of the Sense of Coherence Scale based on Aaron ANTONOVSKY's concept (1987), which is a means of measurement validated on adults as well as adolescents (ERIKSSON & LINDSTRÖM 2005). The original 29-item ver-

sion was validated on a Hungarian adult sample by JEGES & VARGA (2006), and the 13-item version was validated on adolescents by the authors of the present article. (On a sample of 250 elements, the value of Cronbach's alpha was 0.71, the indicator of test-retest reliability was 0.86.) According to ANTONOVSKY's (1987) as well as ERIKSSON & LINDSTRÖM's (2005) instructions, we summarised the answers that could be given on a 7-grade scale in such a manner that the higher score reflects stronger SOC.

Table 1
Distribution of the sample according to school types

School type	N	Percentage
Technical school, vocational training school	258	23.6
Specialised high school	414	37.9
Secondary grammar school	419	38.5
Total	1091	100.0

3.2.2. Rosenberg Self-Esteem Scale

According to the salutogenesis model, sense of coherence is a basic determinant of one's state of health, its measure is some kind of a complex self-confidence. The projection, or so to say, manifestation of this is 'self-esteem' or 'self-evaluation'. To investigate how the latter statement is manifested in adolescence, out of the several hundred current self-image tests, we chose the most widely used Rosenberg Self-esteem Scale (RSE).

    This scale was originally created for a one-dimensional measurement of self-evaluation (ROSENBERG 1965). It is compiled of 10 items that consist of a Likert-type (four-grade) response option. The two endpoles of these response options are: full agreement and complete lack of agreement.

    Likewise on the RSE scales, several psychometric and validation researches were carried out which reinforced the reliability and psychometric validity of the scale (GRAY-LITTLE et al. 1997). Although Rosenberg constructed the means of measurement to be one-dimensional, actually – depending on whether the question is positively or negatively oriented – two dimensions can be sharply discerned according to the factor analysis of the data in SUPPLE and colleagues' study (2012) as well as our own.

3.3. Statistical analysis

For data processing and statistical analysis, we applied the software SPSS 20. Missing values occurred in one or two cases, at random; we substituted these with the average values of students of the same sex, attending the same school type.

To characterise the inner consistency of the applied scales, we used Cronbach's alpha. For the dimensional analysis of SOC as well as self-esteem scales, we carried out a factor analysis; according to its results, the questions concerning self-esteem that were phrased to point towards a positive or negative direction were grouped into two easily discernible dimensions. Based on this, in some cases we regarded the two dimensions as independent scales. After the detailed descriptive statistics (relative frequency, average, deviation), we applied the two-sample t-test to discover the differences between the two sexes (considering that the scale values fulfilled the demand of normality); for examining the coherence in qualitative data, we calculated a chi-square probe as well as Spearman's rank correlation. In the case of every test, we considered the result to be statistically significant if the level of significance did not exceed 5%.

4. Results

4.1. Sex differences in SOC and in self-esteem

According to the two-sample test, sex significantly influences SOC and its three components, as well as the components of self-esteem, phrased to point into a positive and into a negative direction, also separately. P was < 0.001 in every case, except for meaningfulness, where p = 0.042 (*Figure 1*).
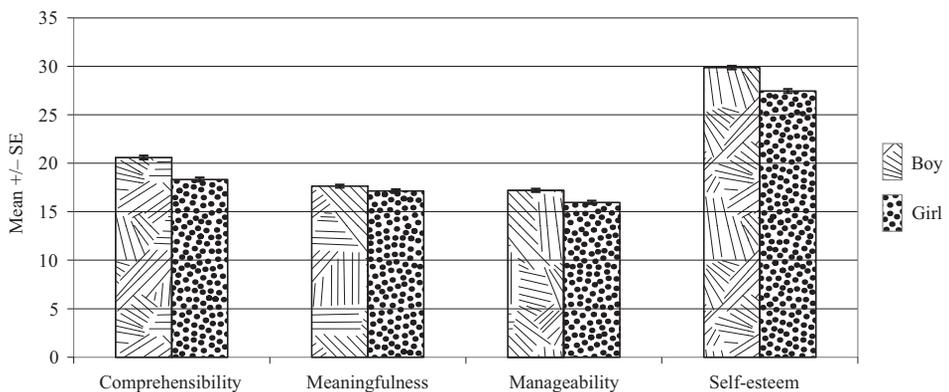

Figure 1
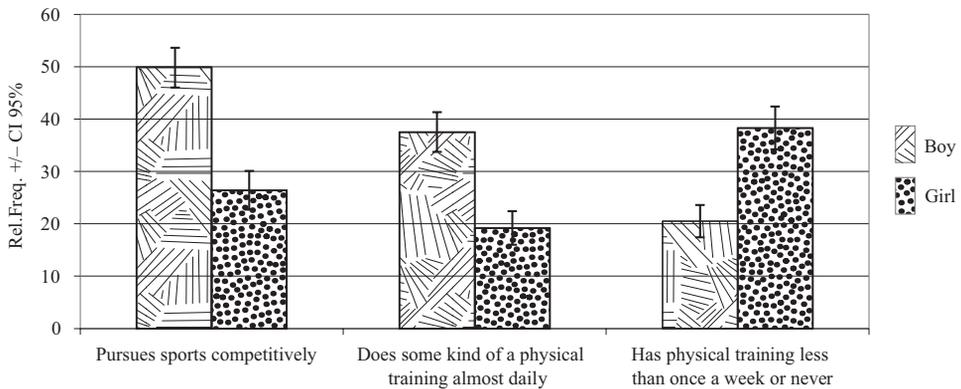Average values of SOC and self-esteem and the standard error of average according to sex

Figure 2
Frequency of physical training according to sex

4.2. Sex differences in sport

Using the self-developed questionnaire, we first investigated the number of people pursuing sports competitively, as well as whether they have any regular training – daily, twice or three times weekly, or once weekly. We also asked questions about competitive sports and recreational sports (Sport for All). In the case of boys, a significantly larger percentage pursue sports competitively; that is, twice as many as in the case of girls (*Figure 2*).

Training twice or three times a week appears approximately in the same proportion in the case of the two sexes; that is, 42.1 percent with the boys and 42.5 percent with the girls.

5.5 percent of the boys as well as 7.5 percent of the girls hardly ever train. Regarding the regularity of sports training, a significant difference exists between boys and girls (chi-square = 63.1, df = 3, p < 0.001).

4.3. Correlations between sense of coherence and self-esteem

The higher the value the person questioned reached on the SOC scale, the higher their scores turned out to be measured on the self-esteem scale (*Figure 3*). With the boys, Pearson's r = 0.357, p < 0.001, with the girls, r = 0.426, and p < 0.001; that is, the connection can be pointed out in the case of both sexes.

We checked the correlation between the respective components of SOC (comprehensibility, manageability, meaningfulness), and separately between the self-esteem measured with RSE_positive and RSE_negative scales. The self-esteem values that were phrased to point into a negative direction were previously transcoded for

the larger value to measure a larger level of self-esteem in this case again. *Table 2* contains the values of correlational coefficients and their significance level.

Once again, when deconstructed to sexes, according to the results, a very strong correlation can be pointed out between sense of coherence and self-esteem in both sexes when applying the complex means of measurement, just like when researching the components.
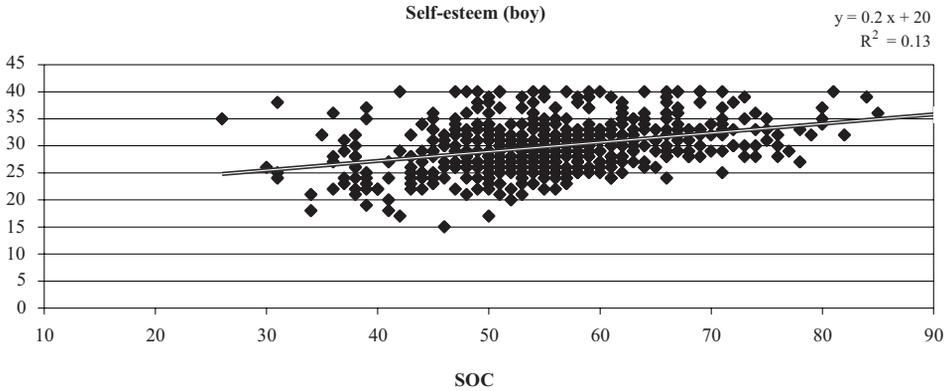

Figure 3a
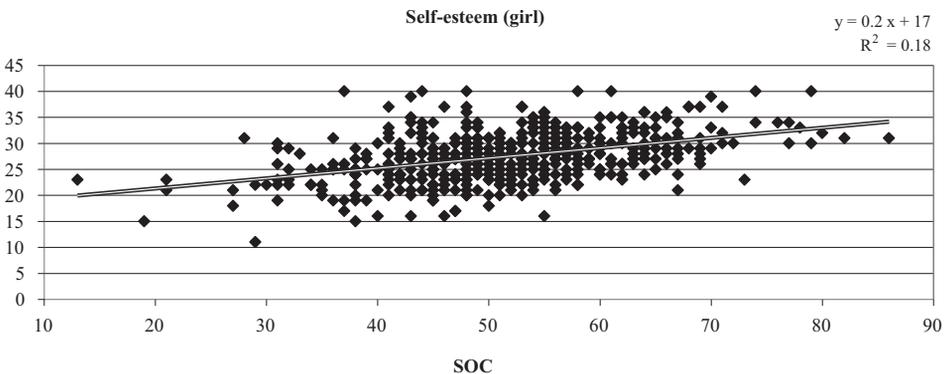Correlation between SOC and self-esteem among boys

Figure 3b
Correlation between SOC and self-esteem among girls

Table 2
Correlations between the components of SOC and self-esteem
and their significance level in the complete sample (boys and girls summarised)

Variables	Correlations	Compre-hensibility	Meaningfulness	Manageability	Self-esteem (+)	Self-esteem (rev –)
Comprehensibility	Pearson	1	0.245**	0.517**	0.223**	0.298**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000
Meaningfulness	Pearson	0.245**	1	0.375**	0.255**	0.320**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000
Manageability	Pearson	0.517**	0.375**	1	0.295**	0.373**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000
Self-esteem (+)	Pearson	0.223**	0.255**	0.295**	1	0.686**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000
Self-esteem (rev –)	Pearson	0.298**	0.320**	0.373**	0.686**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	

Note: **Correlation is significant at the 0.01 level (2-tailed)

4.4. Connection between sport/physical training and SOC

Considering the significant difference that can be found between the two sexes in pursuing sports as well as the level of physical training, we continue to research the connections within the sexes.

On an average, those who pursue sports competitively possess stronger SOC than those who do not, and this statement is valid both for boys and girls. According to the t-test, $p = 0.021$ with boys and $p = 0.024$ with girls (*Figure 4*).
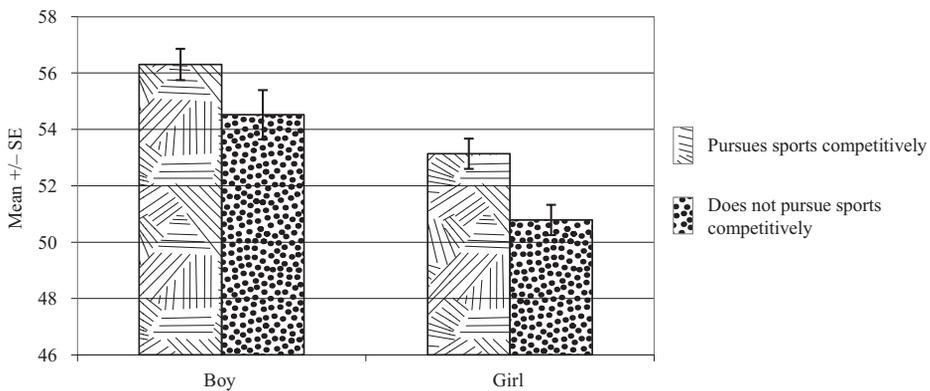

Figure 4
Average values of SOC in terms of competitive sports within the sexes

If we measure physical training with the regularity of not necessarily organised training in the different branches of sports, Spearman's rho rank correlation shows a strongly significant connection ($p < 0.001$) between the scores of the categories: almost daily, 2 or 3 times a week, less frequently than that, and never, as well as the values of SOC (*Figure 5*).
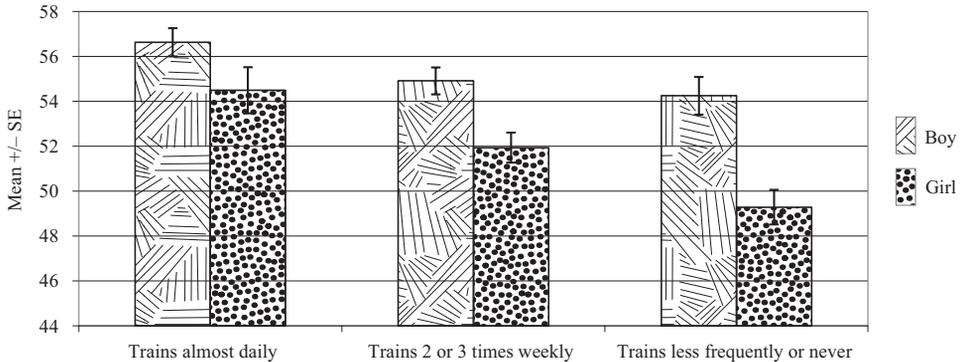

Figure 5

Average values of SOC according to the frequency of physical training within the sexes

4.5. Connection between sport as well as physical training and self-esteem

We investigated the connection between sport as well as physical training and self-esteem with a method similar to the above (*Figure 6*). As it could be expected (since SOC and self-esteem correlate strongly), according to the results of the significance survey, competitive sports have a very strong influence on self-esteem (*Figure 6*), and this was proved to be true with respect to both positively and negatively phrased questions. Between the frequency of physical training and self-esteem, Spearman's correlational coefficient is strongly significant ($p < 0.001$) (*Figure 7*).
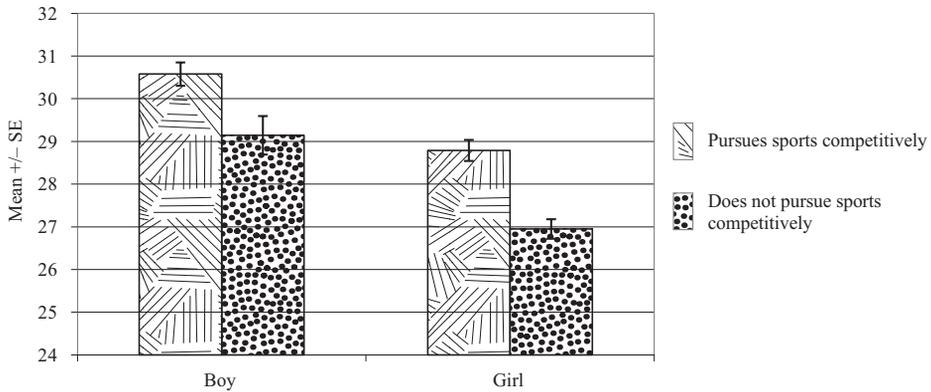
Figure 6

Average values of self-esteem in terms of competitive sports within the sexes
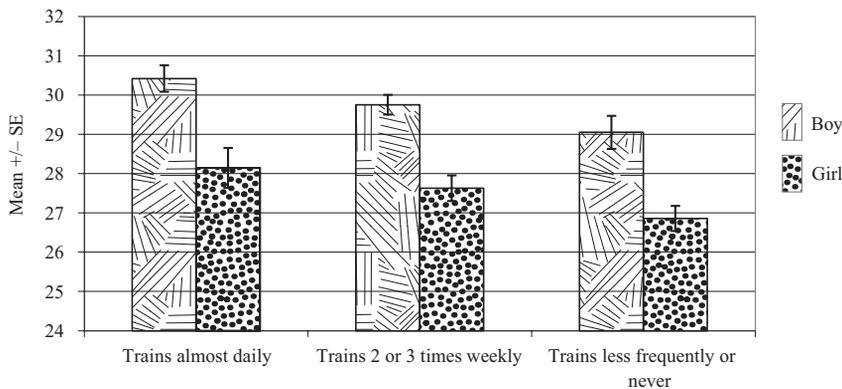

Figure 7

Average values of self-esteem according to the frequency of physical training within the sexes

4.6. Motivations to pursue sports

Our questions were also aimed at external and internal motivations. A force of internal motivation is when we are capable of carrying out a task even without the means of external inspiration. An effective force of motivation is governed by positive emotions. The person experiences the given activity, in our case the training, as something that they consider to be important and valuable.

More than one answer could be selected. 8.5% of the boys and 6.3% of the girls said that they only did sports 'for the sake of company'. 42.3% of the boys and 43%

of the girls replied they did sports 'because of a general desire to train'. 29% of the boys and merely 11.1% of the girls said their aim was 'to reach a good sports result'. 51.2% of the boys and 53.8% of the girls chose 'recreation and leisure' as their motivation. 38.9% of the boys and 50.8% of the girls chose the answer 'I consider it important as part of a healthy lifestyle'.

5. Discussion

The generation survey 'Stress in America', carried out by the APA in 2012, calls attention to the fact that stress dominates peoples' lives to an ever greater extent. Handling stress is also significant because its long-term effect has been proven to contribute to the development of endemic diseases such as high blood pressure as well as psychosomatic illnesses. Adolescents in populations where primary prevention exists can achieve success in the longest term.

We considered the investigation of SOC necessary because according to the literature, SOC is an important power source with a personal character that helps to cope with the stressful events of everyday life (MOKSNES et al. 2012, ERIKSSON & LINDSTRÖM 2005, 2006).

We accepted the statement by TAYLOR and associates (2000), according to whom diverse, evolutionarily selected stress-handling techniques characterise the two sexes. We built upon the survey results by MOKSNES and her colleagues (2012) which stated that compared to boys, there is a stronger connection between SOC and anxiety in the case of girls. The survey results also indicate that girls are especially vulnerable in the period of adolescence, and there is a great need to discover their power sources.

After investigating the connection between self-esteem and SOC, it was proven that higher SOC is associated with higher self-evaluation. This is significant in more than one respect.

Those who possess higher self-confidence are capable of fighting challenges and negative effects more easily, and, they feel that they are valued and respected in their social relationships. They also handle conflicts well. For most people, high self-esteem leads to a happy and productive life.

People with low self-confidence observe the world through a negative filter. Self-esteem influences life management. Self-esteem disorders may lead to deviant behaviour as well as addiction (HEATHERTON & WYLAND 2003).

Uncertainty and the dominance of external, social influences characterise adolescence. In this stage of life, the individual has to learn how to establish a relatively stable self-esteem, to achieve which fighting techniques are necessary.

Therefore we have come to the conclusion that higher SOC as a power source should be achieved in adolescence, too. And this is dominantly necessary in the case of girls. Pursuing sports can be one way to achieve this.

We have investigated whether sport, through the reinforcement of SOC, also

enhanced the self-esteem of adolescents. Sport – as mentioned by PIKÓ and KERESZ-TES (2007) – can be considered a protection factor.

According to the results of the significance survey, pursuing sports affects self-esteem very strongly, as it could be expected (since SOC and self-esteem strongly correlate) with respect to both the negatively and the positively phrased questions.

In Hungary, fitting sports into the obligatory school curriculum is possible until the age of 18. This is a great opportunity and responsibility for the state and the society. This is the age when young peoples' commitment to sport can be formed, also determining their later life management. If they come to like sport at this age, there is a hope that it will have a role in their entire lives; if they reject sport, it will be difficult to build it into their lives later on, even for health reasons (FRENKL 1980).

Motivation is an urge that influences behaviour. The effect of external motivations can be strong, but these are rather situation-dependent. Permanent drives, perspectivic effects can be mostly achieved with internal motivations.

Our survey results show that among 16 and 17-year-olds, internal motivations are dominant, which is significant from the aspect of a long-term positive attitude towards sport. As we have experienced, the main motivating force is not achieving results in sport but recreation and a healthy lifestyle.

If we want to urge young people to be more physically active, we also have to create an environment which creates an opportunity for training. More bicycle roads, sports grounds, parks, traffic-free zones are to be developed; more sport devices are to be made available. Our survey shows that these things would indirectly promote self-esteem and stress handling as well.

In order to have well-grounded, up-to-date preventive, healthcare, and educational programs, it is markedly important to conduct researches that orientate and offer a footing, providing an overview of the attitudes, with the involvement of the target group in question. This overview needs to be constantly reassessed.

We consider it important to spread the results of our researches in professional as well as non-professional circles – also reaching the target group. Everyone is responsible for the decisions they make regarding their own health. We can help them make the best decisions. Responsibility is individual, it cannot be deflected, but introducing the means, discovering cause-and-effect relationships, promoting understanding and recognition is a social task.

The results we have reached during our research can be applied in several fields: in intermediate educational institutions, in the work of professionals dealing with young people, or even political decision-making – and it can also promote more target-oriented and more conscious communication.

For the sake of social awareness to be spread as widely as possible, we would like to publish our experiences on internet sites and community pages, too.

6. Strengths and limitations

The strength of the present study is that it constitutes a survey that was carried out with theoretically grounded, validated means of measurement, on a relatively large sample, with a high proportion of responses. It investigates the system of connections including SOC, self-esteem, and sport as well as training-based leisure time on a Hungarian population, via a novel approach.

Its partial results are comparable with international survey results. For example, compared to a Norwegian survey (MOKNES et al. 2011), the SOC values of 16 and 17-year-olds are significantly lower in the Hungarian sample, whereas in other aspects (like sex differences) they show complete correspondence. The wish to discover the causes of these differences inspires us to carry out further comparative surveys.

7. Outlook

In agreement with the data in corresponding literature, it can be observed that among 16 and 17-year-old students, boys show a higher level of sense of coherence and self-esteem than girls.

It was also proved that those who pursue sports competitively generally have higher self-esteem and sense of coherence than those who do not. As for those who do not do sports for competition but merely train for recreational or other purposes, their SOC as well as self-esteem is enhanced in accordance with the regularity and frequency of the training. This tendency is markedly outlined among boys and girls both.

In the researched age group, there are significantly more male students who pursue sports competitively than females, and physical training is also at a higher level among boys. Could this be one of the explanations for the boys' stronger SOC and SES level? We sought an answer to this in the course of our multivariable analyses (which we did not describe in detail in our present study); we merely intend to emphasise the result that even in themselves, the pursuit of sports and physical training significantly 'explain' the sex difference, and besides that, the effects of several socio-demographical factors can be pointed out.

As for a more detailed content analysis of the sex differences between the items that constitute the SOC and SES scales, as well as the results that we have found when including other types of leisure activities in the survey, we will display these in a subsequent publication.

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