

# Effects of a health-education program on high-school students' health behaviour and body assessment

Thesis

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## **Introduction**

### ***Health behaviour***

Advancements in medicine and social-economic status in the industrially developed countries results in an increase rising average age (Mészárosné Seres, 2018).

The experience of childhood, and within it a mother who sets a good example, influences the willingness to engage in physical activity in adulthood (Olvasztóné et al., 2007). We conducted research with fifteen- and sixteen-year-old high school students of „Generation Z” (Klenovicsné Zóka, 2011). We chose them because positive experiences in physical education could encourage physical activity and healthy behaviour for the rest of their lives. (Bendíková és mtsa, 2017).

According to *Bar-on's* research, (2001) a sedentary life style is unfortunately characteristic not only in adulthood, but among teenagers and younger generations as well: kindergarten-aged children spend too much time in front of the screen. and less time with physical activity. Although peer influences gain more importance in the life style choices of young people, the family's health behaviour could still set an example (Bar-on, 2001). Their sudden growing, changing body shape can cause inhibitions and weak posture or other posture problems. Referring to the 2009 European public survey, back ache and other spine problems rank as the second highest health complaint among those over 14. Fifty percent of the adults have such complaints. The data of the years from this millennium, shows an increasing tendency in this problem (Somhegyi, 2014). In the last years „integrating of body awareness” into the posture training exercises is required by more and more therapists in order to not only teach the traditional strengthening and stretching exercises for the patient,

but also re-teach habitual actions and movements. Self-control is the basis of both the posture and attitudes connected to health behaviour. Controlled body posture, physical activity, nutrition, drinking water, and consumption of vitamins and uncooked fruits and vegetables characterise one's health behaviour.

Lifestyle in adolescence can influence health and lifestyle in the adulthood. It is important to recognize how linked the above-mentioned elements are and their influence on one another.

When designing a health education program, physical activity and nutrition should be taken into account, as well as how they, in turn, are influenced by different segments. Younger generations become the next adults of a society, so researching their health behaviour is extremely important. They will be not „only” citizens, but mothers and fathers of families too: interpreters of values for their children. The main aims of research into their health behaviour are to make their health education much more effective by analysing the influences on healthy lifestyle and health behaviour (Mikulán, 2015).

### ***Body awareness***

As mentioned above, in addition to surveying and interpreting useful information for a healthy lifestyle, our pedagogical aim was also to consider the designs that help the developing of one's self control. (Self-control is used in our research not only in its everyday meaning, like „self-break”, but the ability of monitoring of one's body reactions and real biological needs.) There are different ways for activating self-attention. Periodical auditive signs were used in our research to recall and fix the correct posture in everyday life.

## **Aim of the study**

Our aim was to survey the characteristic nutritional and postural segments of the health behaviour of high school students aged of 15-17. Their body awareness and self-control were both studied, as well as their changing due to a quarter year intervention.

## **Hypothesis**

1. Comparing the results of physical activity, no significant differences would be found among the different high schools and genders.
2. Comparing the results of the drinking of water and consumption of uncooked vegetables and fruits, significant difference would be found between the genders, but not among the different high schools.
3. Comparing the results of their own body qualifying, significant difference would be found between the genders, but not among the different high schools.
4. Comparing the results of their stress coping strategies, significant difference would be found between the genders, but not among the different high schools.
5. Comparing the results of their health damaging habits, significant difference would be found between genders, but not among the different high schools.
6. Comparing with the two other groups, significant developing of the researched segments of health behaviour is supposed for the Health Group and the Combined Group.

7. Comparing with the two other groups significant developing of body awareness and physical exercises are supposed for the Posture Group and the Combined Group.
8. Body awareness is supposed to develop almost equally among all groups that experienced intervention, but especially in the Combined Group.

## **Method**

### ***Researched groups***

351 students were researched: 144 male and 207 female. They were  $16,12 \pm 0,64$  years on the average. Their body fat index:  $22,41 \pm 8,75$ . There were mostly sixteen-year-old students in the researched high schools. 158 of them are from the Szent László High School, 93 of them are from the Sylvester János Protestant High School and 100 of them are from the Premontrei Szent Norbert High School. The number of girls is higher in these schools. Groups are the Health Group (H. G.) with 75, the Posture Group (P.G.) with 77, the Combined Group. (C. G.) with 94, and Control Group (Ct.G.) with 105. The lowest number of the students are in the H. G. (21,4%), and the highest in the C. G. (29,9%). Since the groups needed to be separated from one another, one class made a researched group in each school. Groups were appointed by their own physical education teachers based on our experiences. Combined Groups had the most complicated tasks, so classes with the highest abilities were chosen for this group in each school.

### ***Participants of the deep interviews***

Deep interviews were conducted with 12 students, 4 physical education teachers, and 4 parents taking part in the research. They were chosen by personal contact and their commitment to the program.

### ***Design of the intervention***

After the first state research, the three intervened groups had a 7-week program. When it finished, all groups were researched again. This time questions were asked about changes in their healthy habits and their subjective opinion about their lifestyle and posture control.

Posture training exercises and BAQ-H were researched again. Our non-invasive design was presented to the Ethical Committee. Age groups, high schools, and physical education teachers were mentioned in it. Directors of the high schools, students and their parents were informed of the research, of its design, range, and methods.

- H. G., P.G., C.G., Ct.G.: Recalling the academic part of Physical Education focusing on the healthy lifestyle.(Importance of physical activity, daily recommended consuming of uncooked foods, water, health damaging habits.) Definition of the correct posture, its awareness. Presentations were put on the classes' Teams interface.
- Posture training exercises are part of the curriculum, but due to the necessity of equality, the same exercise design was shared for the teachers, consisting of 14 programs for the following 7 weeks. It was supplemented weekly with functional exercises (standing, sitting, gait, bending forward and back) for the P.G. and the C. G.
- H. G. and C. G.: Recalling of criteria of healthy lifestyle once a week.
- P. G. and C. G.: Designing and coaching and auditive sign, which should sign in every one or two hours. In the school it can be the

sound if class bells ringing, if the cell phones are not allowed, but out of school the most convenient method for this is one's own cell phone or another programmable device.

- Range of posture training exercises is approximately 10 minutes and can be inserted after warm-up.

## **Data collection**

### ***Survey***

Survey method was used to research musculoskeletal problems and healthy habits (physical activity after lessons, daily consuming of uncooked fruits and vegetables and water), health damaging habits (smoking, consuming alcohol).

### ***Posture exercises***

The Hungarian Spine Society's design for controlling the posture muscles consists of 12 exercises (Somhegyi et al., 2014). These were required in one of our earlier research projects. Two static exercises were chosen, and their holding time were measured in seconds (Abonyi et al., 2020).

### ***BAQ-H***

The survey gauges the body cycles, realizations, and predictions of physiological reactions, based on a stable inner representation (Köteles, 2014). Each statement should be scored from 1 to 7. 1 means the less agreeing and 7 the most, 4 is the neutral or undecidable opinion (Likert scale). We preferred this test by this age group because of its clear understandability. Scores make the total score of the survey--the higher the score is, the more advanced the body awareness is.

### ***Deep interviews***

22 questions were asked of the students, 17 of the teachers and 13 of the parents. We were talking to each person as „you” and emphasizing the importance of honest replies. Questions of the three groups were mainly in synchrony with one another, so replies were recorded in a table near each other.

## **Results**

### ***Survey***

Significantly, most students of PSzN were physically active comparing the schools' results. Here almost half of the students train 3-4 times a week after lessons. Comparing the genders' results, we can see, that boys are significantly more active.

The most equal data are of consuming of uncooked fruits and vegetables among the schools. One fifth of the students consume fresh fruits and vegetables 3-4 times daily, (both girls: 19,3% and boys: 18,1%) and almost half of them once or twice (52,8%, 53,6%).

Looking at the data of water drinking, the optimal amount (3-4 liter) is consumed by the students of PSzN (18%), 15,8% of the SzL and 12,9% of the SJP. The difference is significant between the two genders in this area. 26,4% of the boys as opposed to 8,2% of the girls drink the optimal water amount.

It is typical for the students to accept themselves, pointing only to 1-2 problems of their bodies (45,9%, 49,5%, 54,0%). Even distribution can be observed on this area.

The most developed students are from the SLH, 29,3% of students live at peace with their body qualities. Boys have higher



self-confidence already in this age. 37, 5% of them have no problems with their bodies, as opposed to 17,5% of the girls.

Although 26,3% of the PSzN students eat more or consume more sweets during a stressful period, most of them work it off with physical activity (35,4%) compared with data of the other two schools (SLH: 29,1%, JSPH: 28,3%). So significant difference was shown in this between high schools. Comparing the genders' data, we can observe a significant difference. Twice as many girls than boys are stress-eaters, twice as many boys than girls cope with stress by doing physical activity.

Most of the researched students don't smoke at all, the least non-smokers are in the SJP (81,7%) and the most casual smokers, as well (9,7%), which in the two other schools are 3,2% and 2,0%. There are significantly fewer smokers by far in the PSzN.

Almost the half of the two religious high schools (48,4%, 47%) don't consume alcohol at all while at SzL it was 65,2%. At 15,1%, students of the SJP consume alcohol significantly more frequently than the other school's students.

Smoking habits of the two genders are almost the same, but when comparing their alcohol consuming habits, significant difference can be observed. Though rates of abstinent are very likely (57,6% and 54,1%) and there are 10% more girls are among the casual consumers (41,1%), twice of the boys than girls consume alcohol regularly (11,1%, 4,8%).

We can observe significant difference in the judgement of our program among the groups. Members of the P.G. and C.G. found the intervention useful mostly and mainly members of the Ct. G found it less useful. Members of the H. G. stated the most realizable positive change in their life (28,3%).

There were significant differences in the realizable positive change in their posture among the groups. 12% of the H. G. stated

a positive change in it, and 13,3% of the Ct. G. 26,9% of the C. G. shows a better ratio, but the highest rate, 53,2% of the P.G. felt their realizable posture correction as an effect of the program.

### ***Posture exercises***

Strength stamina of back muscles increased mostly in the H. G., with 25,68 sec on the average. In the P. G. this increased by 23,28 sec, while in the C. G. it was 18,25 sec and in the Ct. G. it was 8,53 sec. Looking at the abdominal muscles' strength stamina among groups, students of the C. G. produced the highest development: 105,55 sec. Ct. G. increased its first average result by 26,79 sec, H.G. by 22,47 sec, and P.G. by 10,71 sec.

### ***BAQ-H***

Health Group made  $71 \pm 15,49$  score by the first state research and  $73,9 \pm 15,15$  by the second one, so their BAQ-H developed by 2,9. Posture Group's first result was  $70,76 \pm 11,00$  and  $73,97 \pm 11,70$  was the second one, showing which shows a 3,21 development. Combined Group scored  $74,34 \pm 14,19$  for the first time and  $75,63 \pm 13,94$  for the second one, which is a 1,29-score difference. Control Group began the research with  $71,71 \pm 15,14$  score and finished it with  $71,5 \pm 13,98$  score, that is 0,21 decrease in the score.

### ***Deep interviews***

Our interviewed subjects all agreed to a person that health education would be necessary in the educational institutions both academically and practically.

## **Discussion**

The physically most active students are in the PSzN, about half of them do some physical activity after lessons 3-4 times a week, and more than the half of them once or twice weekly. Comparing this data of the three high schools, significant difference was shown, just as by comparison of the genders' data. Our first hypothesis's first and second parts have been confirmed.

The high schools' data of consuming of uncooked fruits and vegetables and water are very close to one another. Comparing this data of boys and girls, there is not significant difference by the former, but there is by the latter: boys drink significantly more water than girls, probably because of their more frequent physical activity. More than one fourth of male students drink 3-4 l liquid daily, while with the girls it was less than one tenth. One half of the latter drink less than 1 liter a day. Our second hypothesis has been partly confirmed.

There was no significant difference among the schools in the students' accepting their body qualities, so this part of our third hypothesis has been confirmed. Comparing the genders' results we can observe that, significantly, twice as many boys are satisfied with their external properties, than girls. Girls significantly criticize a specific body part, while boys their overall physique. This data is supported by another, namely, that one third of the boys think themselves too slim, while three fourths of the girls think they have a normal body type. Part of our third hypothesis has been confirmed.

It was astonishing to find significant difference comparing the stress coping methods of the schools' students, so this part of our fourth hypothesis has not been confirmed. These results relate to other research scores. The most stress smokers are in the JSPH (the most smokers students as well), while PSzN is where the physically

most active students can be found, who probably noticed the useful effect of training during an uneasy period of their life. By almost half of the genders with no developed stress-coping strategy. By the rest of them significant difference can be observed: girls are mainly stress-eaters, boys do something physical activity. So, this part of our fourth hypothesis has been confirmed.

Comparing the health damaging habits, the most smokers and alcohol consumers were found at the SJP by a significant margin. Students there drink alcohol three times more frequently than students of the other schools. The first part of our fifth hypothesis has not been confirmed. There is not a significant difference between the genders in frequency of smoking, but there is in the frequency of alcohol drinking. Boys consume significantly more alcohol, so part of our fifth hypothesis has been confirmed.

We could not find as many differences in the development of health segments as we thought, so our sixth hypothesis has been partly confirmed.

Our seventh hypothesis has been confirmed, because stamina-development of the C.G. 's posture muscles were significantly higher than in the other groups. Higher than the P.G. 's as well, but it must be mentioned, that their starting data were much higher than the others'. 53,2% of the P.G. and 26,9% of the C. G. stated a subjective positive change in their posture.

All the three intervened groups' development jump out in the BAQ-H. The lower starting scores belonged the P.G. (70,76) and the H.G. (71). They developed the most: the former by 3,21 and the latter with 2,9. The 1,29-score increase of the C. G. seems less for the first sight, but let's not forget their starting scores (74,34), which stood out from the others' and could not be approximated by them at the second state research either. That's why this group was not able to produce

such development as the other two intervened groups. By the first state research Ct. G. scored (71,71) almost the same as the H.G. and the P.G., but by the second one was 0,21 less, which means, they have not developed in this segment at all. Our eighth hypothesis has been proved.

## **Conclusion**

Requiring this pedagogical method, based on self-control, we relied on approximately equal development of the intervened groups. This researched area proves mostly the effectiveness of our pedagogical method.

## **Advising**

Referring to our research, we state, that it is not only necessary to inform and teach and control the healthy lifestyle's criteria (healthy- and damaging habits, correct posture) to the students, but it also to teach them how to put them in practice.

## **Limitations**

- Three high schools took part in our research (originally, we designed our research with high school from Budapest or from outskirts, which are supported by the state, a denomination, or a foundation).
- The intervened groups have developed almost equally as we suspected, but the Combined Group showed the least development. This group had the highest starting scores, higher, than the other groups' finishing scores.

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