

IS THERE DEMAND FOR ONLINE PHYSICAL EDUCATION NEXT TO IN-PERSON CLASSES? A STUDY OF THE MOTIVATION OF EÖTVÖS UNIVERSITY'S STUDENTS

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Abstract

In the autumn semester of the 2021/22 academic year, Eötvös University offered both online and in-person physical education courses, which were filled within days. The interest of hundreds of students in the online course peaked the educators' interest in whether there is a difference in the motivation of students who complete the course on-line and those who attend in-person. Of the 14 sub-factors of the EMI-2 motivation scale, only two (affiliation and competition) showed significant differences between the students of the two courses, however when comparing women and men we found significant differences in 7 factors. Regardless of whether the students attended the online or in-person physical education course, their motivations for physical activity were almost the same. Greater differences were observed between the sexes and between former competitive and non-competitive athletes.

Keywords: *university physical education, online education, gender differences*

Introduction

At the beginning of the pandemic, the physical education colleagues at Eötvös Loránd University combined creativity and effort to move physical education on-line. As they received significant positive feedback from the students, when in-person courses started again in the fall semester of 2021/22, the team decided that they would offer the online course in parallel. At this point, the idea arose to examine the motivations of students enrolled in in-person and online physical education.

University is the final opportunity for students to exercise regularly in an institutional framework, and thus it is a serious challenge for physical educators to incorporate regular exercise into students' lifestyles by the time they leave the university walls. According to a Eurobarometer (2018) report, the propensity to exercise once a week decreases significantly with age - while 46% of those aged 25-39 exercise at least once a week, only 30% of those aged 55+ exercise weekly. Twenty percent of the respondents indicated a lack of motivation and interest as the reason for the lack of activity.

From middle-age, friendships, sociodemographic and socioeconomic background, and motivational levels also influence exercise-related attitudes (Boros, 2019). We also found several studies that examined the motivation for physical activity specifically of undergraduate students that participated in in-person sessions.

Teixeira et al. (2012) conducted a meta-analysis of 66 empirical studies focusing on SDT (Self Determination Theory), a theory of self-determination. Their study included adult recreational athletes (consciously avoiding school-age children as well as competitive athletes). Analysing the relationships between motivations, two conclusions were drawn: 1.) The more internal motivational factors or goals are associated with exercise, e.g., attachment, social relationships, challenge, and development of motor skills, the higher the probability of regular physical activity. 2.) Increased perceived competence as a result of movement has a positive effect on the attitude associated with physical activity. The Author also points out that there are few studies that examine the gender gap, i.e., it is not possible to clearly determine whether or not the phenomena mentioned earlier are the same in men and women.

Kilpatrick et al. (2005) found that the physical activity of U.S. college students decreased during their college years compared to high school. Moreover, it has been shown that the level of physical activity, at this age, is not sufficient to improve health and fitness. It is even more disturbing that the physical activity of nearly half of the students continues to decline after graduation. Their study examined the exercise motivation of 233 students. In the analysis, two groups were formed, the competitive athletes and those who were regularly active on a recreational level. Their research found that students who do not compete have a stronger internal motivation than their competitive peers, and within that, appearance, stress and weight management, were their motivations for regular movement. Moreover, a significant difference was found between the two sexes in 5 factors: Men were more motivated by challenge, competition, social recognition, and strength and endurance, while women were more motivated by weight-control.

Ebben and Brudzynski (2008) studied more than a thousand American college students' exercise motivation using the EMI-2 scale. Nearly 80% of respondents said they exercised regularly and the primary motivations were a healthy lifestyle, fitness, stress management, enjoyment and well-being.

Egli et al. (2011) conducted a study of more than two thousand undergraduate students and found that men exercised regularly because their physical condition is a source of enjoyment,

for the challenge, social recognition, affiliation and competition. Women, meanwhile, were motivated by ill-health avoidance, positive health behaviour, and appearance. The motivation levels of stress management and revitalization were similar for both sexes.

Several studies have examined the extent to which an active lifestyle after leaving formal education is influenced by a youthful athletic or active past. Some studies (Baranowski, 1992; Sallis, 1997) suggest that childhood inactivity negatively modulates adult physical activity. In contrast, Taylor (1999) found that regular exercise and competition in adolescence is not a prerequisite for adult exercise. Based on their results, they believe that forced, performance-oriented sports actually have a negative impact on later active lifestyles. Numerous results suggest that commitment to physical activity is one of the most important determinants of regular leisure-time physical activity.

There is little literature analysing online physical education from a motivational perspective. Fencel (2016) started from the “old school” experience that sessions conducted in the presence of sports professionals are more efficient and effective. In his study, he refers to the results of Bailey and Vincent (2012), which also support this hypothesis. Nevertheless, he concluded that further research is needed before it can be clearly concluded that in-person education is more effective than online. McNamara’s (2008) study compared the fitness and cognitive outcomes of students enrolled in in-person, hybrid, and online weight training. The 16-week course had the same curriculum and requirements for all three forms of education. The results showed that all three groups knew the theoretical curriculum, however the online group scored significantly lower in bench press and squatting. The authors interpreted the reason for the unfavourable experience of the online group as a lack of motivation and low accountability. These results suggest that a special evaluation system is needed in cyberspace for students to effectively implement the tasks. Sidman (2011) also compared in-person and online group motivation for more than 1,000 students. In his study, the BREQ-2 (Behavioral Regulation in Exercise Questionnaire) examined 5 sources of motivation (lack of motivation, external or internal motivation, indeterminate and introjected). Based on his results, he found no significant difference in the commitment of the two classes to physical activity. However, there were significant differences by age and occupation. The Author draws the attention of sports professionals to the fact that taking an online course does not mean that applicants are trying to avoid physical activity, but often rather to balance their responsibilities. That is, they need more flexibility in time and space.

The aim of the study is to map the motivational background of Eötvös University students to:

- understand the motivational differences between female and male students;
- design on-line courses students feel address them personally.

Hypotheses

1. The factors of a healthy lifestyle will be prominent in our students, regardless of the format of the course.
2. There will be a difference in the social recognition and competition factors between in-person and online course students.
3. Females will be more motivated to exercise by weight control and appearance than men.
4. Students who had played sports regularly for at least 3 years prior to entering the university will be more motivated to compete than their non-competitive peers.

Methods

After a year and a half of remote learning, in-person courses resumed in the fall semester of the 2021/22 school year. Both online and in-person classes were offered in Eötvös University's online administration system. The maximum number of students signed up in a short time for the in-person classes, and the number of students registered for the online course exceeded all expectations, with no decrease in the number of students from the previous (online only) semester and a total of over 350 students registered for the course.

In the first and second weeks of the semester, the students enrolled in physical education courses completed a questionnaire that included the following subunits: general data, athletic history, and the EMI-2 (Exercise Motivation Inventory) 5-point scale. The EMI-2 contains 51 questions and 14 subscales measuring intrinsic and extrinsic exercise motivation. It is a valid tool for measuring the motivational factors of physical activity in adult men and women, both regular and non-regular athletes. (Weight Control, Ill-Health Avoidance, Revitalization, Appearance, Social Recognition, Stress Management, Health Awareness, Strength and Endurance, Enjoyment, Affiliation, Health Pressure, Competition, Nimbleness, and Challenge). (Markland, Ingledew, 1997) (Ethical permission: (KEB: 2020/191.)

Participants

Physical Education is an optional subject at the University, for which students receive credit. Neither the BSc degree nor any specific major requires completion of physical education classes for graduation at Eötvös University, while most Hungarian universities require two semesters of free physical education for graduation. Novák et al. (2021)

Over 350 students registered for the online course and 279 (women: 200) completed the questionnaire validly, while 190 (women: 107) of the nearly 700 students who attended in-person classes participated in the survey.

Results

Following analysis of the data the first factors to emerge reflected the numbers of students who took part in the physical activity sessions (Table 1).

Table 1: Presentation of test sample

		MEN	WOMEN	TOTAL	
BSc	Online	59	139	198	326
	In-person	63	75	138	
Teacher training (5 yrs)	Online	5	16	21	38
	In-person	5	12	17	
MSc	Online	15	44	59	89
	In-person	12	18	30	
Ph.D.	Online	0	1	1	6
	In-person	3	2	5	
Total		162	307	469	469

Kilpatrick's (2005) results pointed out that the physical activity of students decreases during their university years. A similar phenomenon is observable in Table 1, as the number of students attending physical education classes decreases with degree level, however it should be taken into account that the absolute number of students also decreases significantly. The

extremely low participation of students in the teacher training program is concerning in light of the fact that:

- There are nearly three thousand students in the program,
- Regular physical activity is missing from the lifestyles of prospective teachers.

Five percent of the students (8 men and 14 women) took both in-person and online courses.

Table 1 shows that the proportion of women in both education formats is higher. This raised two questions: Is there a higher number of women because the proportion of female students at the University is higher, or because the classes offered are more popular among women? We examined the classes offered, and based on Table 2, concluded that the supply was balanced for both genders in the online and in-person courses. Moreover, there are classes that appear in both education formats. As the number of female students at the University is almost double the number of male students, the participation rate in PE between the sexes needs further study in the future.

Table 2: Physical Education Courses 2021/22 Fall Semester

Online Classes	In-person Classes
Cycling	Team sports games (football, basketball and volleyball)
Ball coordination	Individual sports games (badminton, tennis, squash)
Musical coordination	Swimming
Sculpture tours	Snowboard, roller skating, fitness park
Core gymnastics	
Conditioning	
Running	
Toning	

We examined whether there is a difference between the motivation of students participating in online and in-person classes. The responses to the EMI-2 questionnaire show healthy lifestyle, development of strength and endurance, and revitalization are the primary motivations in both groups (Figure 1).



Figure 1: Comparison of motivation in online and in-person courses

These data suggest that students' motivation for physical activity is primarily internal. While pleasure and enjoyment also played a leading role in previous studies, in the case of Eötvös University's students these factors shared 4th and 5th place with stress management.

Students ranked social recognition and competition (as an external motivating factor) and health pressures in the last three places. Our hypothesis was only partially realised - while competition and affiliation do indeed motivate students in the in-person course significantly more strongly, we did not find a similar difference in social recognition.

As a first step, regardless of the education format, we examined the differences between women and men who enrolled in a physical education course (Figure2).

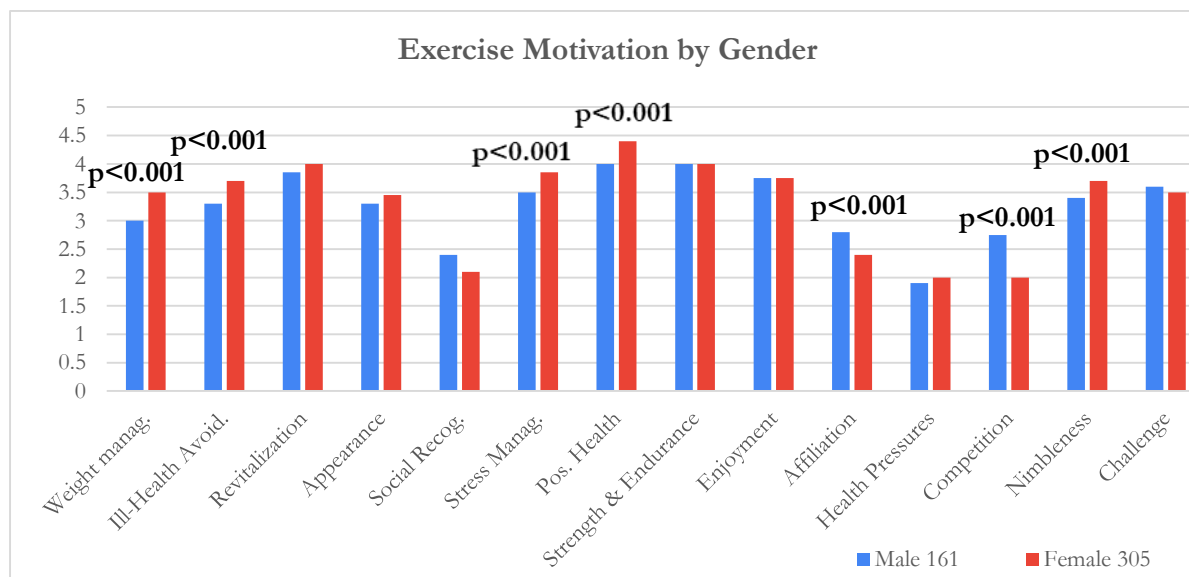


Figure 2: Comparison of motivation of men and women

Consistent with the results in the literature, women show significantly stronger motivation for weight control; which, as Teixeira (2012) explains, is primarily caused by expectations and patterns emanating from the media. For women, ill-health avoidance behaviour, combined with stress management and nimbleness, are more significant than for men. For men, affiliation and

competition are significant motivations. Interestingly, when we compared men and women in the in-person and online courses separately, only competition showed a significant difference in both education formats.

As described above, several studies have examined the extent to which an active lifestyle is influenced by youth participation in competitive sports. Some studies suggest that childhood inactivity negatively impacts adulthood. In contrast, others have found that regular exercise and competition in youth are not a prerequisite for adult exercise. Students attending Eötvös University's physical education course were asked about their athletic background, meaning regular participation in training and competition before higher education (Table 3).

Table 3: Men and women athletes and non-athletes before higher education

	MEN			WOMEN			TOTAL
	Online	In-person	Total	Online	In-person	Total	
Athlete	43	45	88	117	59	176	264
Non-athlete	36	38	74	83	48	131	205
TOTAL	79	83	162	200	107	307	469

Regardless of whether we analyse and examine the sample in terms of course format or gender, it can be seen that almost the same proportion of students attend physical education classes, whether they played sports regularly or not before their university years. Eighty percent of pre-university athletes competed in sports for more than 5 years. The motivational background of students with and without a competitive athletic background is shown in Figure 3.

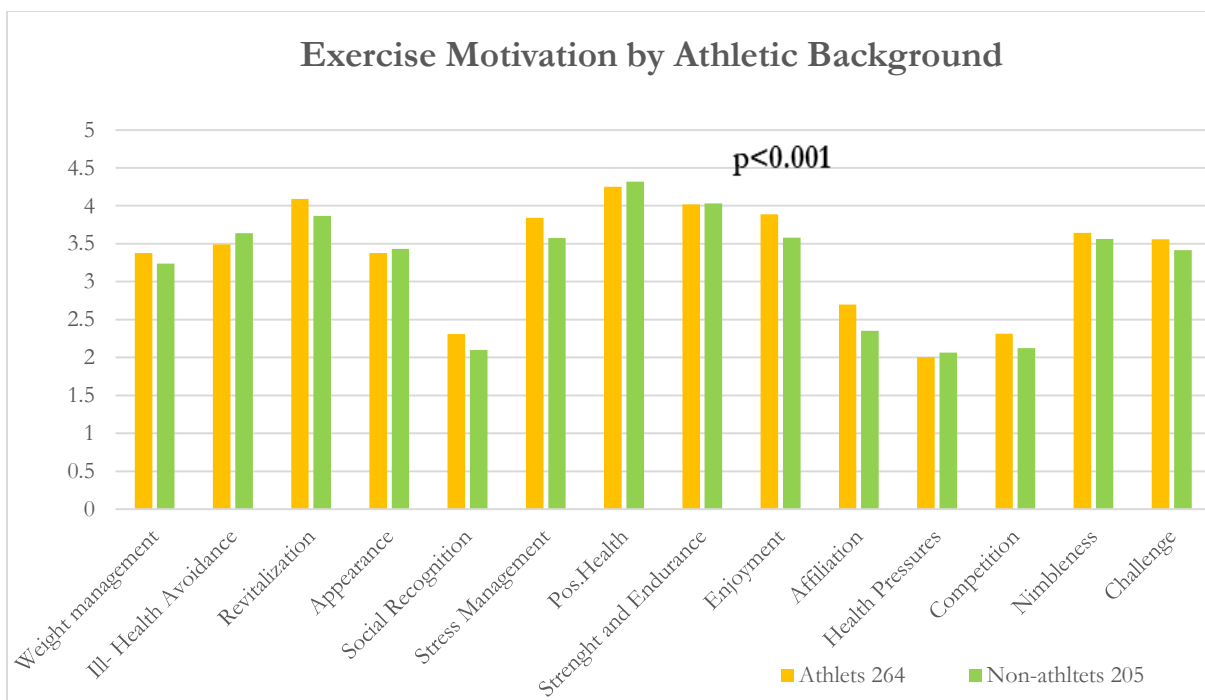


Figure 3: Comparison of motivation of athletes and non-athletes

The results suggest, albeit not significantly, that non-athletic students were more motivated by health-related factors. Significantly, athlete students showed a stronger attraction to physical activity in the enjoyment subfactor. When examining the athletes by gender, we found that women showed stronger motivation in weight control, while men showed stronger motivation in competition. This can only partly be said about their non-competitive peers, as they only showed a similar tendency in the competition subfactor.

In the detailed analysis, we also compared the motivational differences of in-person and online course students. Figure 4 shows the motivation of student athletes and non-athletes for the in-person classes.

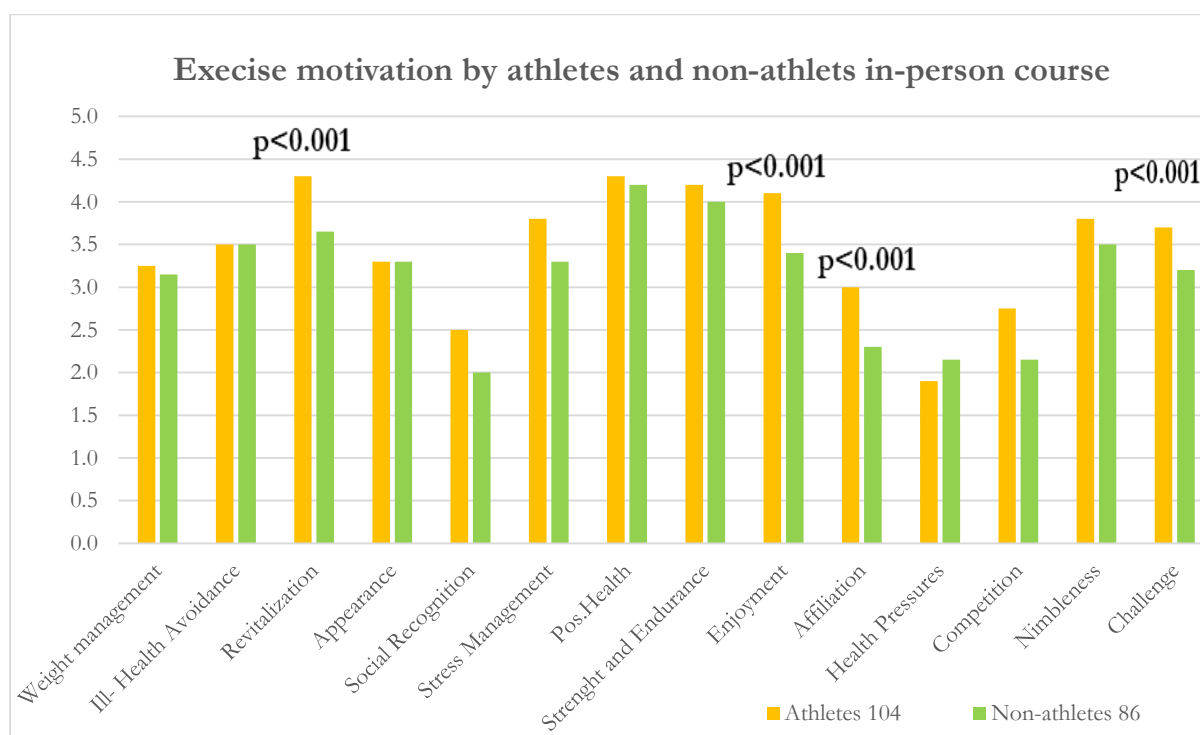


Figure 4: Comparison of the motivation of athlete and non-athlete students in the in-person class

In general, the student athletes showed higher or equal motivation than their non-athlete counterparts in all subscales except for health risks. Moreover, they experience revitalization, enjoyment, affiliation, and challenge significantly more strongly. Athletes and non-athletes (separately) were also compared by gender. In both groups, we found that competition was a significantly more important factor for men, and previous athletic background was not a determining factor.

In a similar comparison of the online course, we found no significant differences in any of the cases. In the comparison of athletes and non-athletes, in contrast to the in-person course, there was no difference between the two sexes. Our comparison of the two groups (athletes and non-athletes) by gender also yielded homogeneous results.

Discussion

Similar to the international results, among Eötvös University's students the health-related subfactors were the prominent motivations with the exception of health pressure, which is likely due to the young age group. Women are significantly more motivated than men to achieve a

healthy lifestyle and maintain an ideal body weight. For men, competition is such a strong motivating factor in both in-person and online courses, a fact which should be taken into account when designing physical education courses in the future.

Contrary to our hypothesis, social recognition did not appear as a strong motivation in any of the analyses, among either in-person students or athletes. To our surprise, the athletes did not prefer competition, but the enjoyment of physical activity. In addition to pleasure, revitalization, affiliation, and challenge also appeared as external and internal motivational factors in the students of the in-person classes. None of these phenomena were experienced by students taking the online course. It is noteworthy that affiliation as a strong motivational factor appears several times in the study, which may also suggest that our students would like to express their university affiliation through physical activity. The results of our present study suggest that men's competitive opportunities should be incorporated into course design in the future, and that there is little difference between the external and internal motivations of online and in-person course students.

Limitations

Unfortunately, the human and facility resources available for in-person education are much lower than required to meet the needs of Eötvös University's students. Thus, the study sample only describes the motivation of students who were among the first to enrol in physical education. The demand from students is higher than the capacity of both human and institutional resources.

In the development of exercises and classes for online education, the primary consideration was to not require special equipment or space. Indeed, fitness exercises can be performed anywhere, even on a yoga mat, without the need for sporting goods (dumbbells, rubber bands, etc.). Considering these conditions, the number of potential classes is significantly reduced.

Conclusion

While before the pandemic the idea of directing and leading physical education programs online came up very rarely, since the shut-down the idea is no longer considered warped, however authoritative research and results have yet to be produced in this area. Today, the question is no longer whether online physical education has a *raison d'être*, but rather how internal motivation can be strengthened so that it becomes a commitment. That is, by the time students leave the university, regular physical activity should be integrated into their healthy lifestyles.

References

- Baranowski T, Bouchard C, Bar-Or O, et al. (1992): *Assessment, prevalence and cardiovascular benefits of physical activity and fitness in youth*. *Medicine and Sciences in Sports and Exercise*, 24: 6. S237-47.
- Bailey, Vincent (2012): *Evaluation of a University General Education Health and Wellness Course Delivered by Lecture or Online* *American Journal of Health Promotion* <https://doi.org/10.4278/ajhp.101020-QUAN-344> letöltés: 2021. december
- Boros (2019): *A felnőtt magyar népesség egészségmagatartása*. Pécsi Tudományegyetem, Bölcsészettudományi Kar, Demográfia és Szociológia Doktori Iskola. PhD értekezés. Retrieved: 2021.11.02. from <https://pea.lib.pte.hu/bitstream/handle/pea/23230/boros-julianna-phd-2019.pdf?sequence=1&isAllowed=y>
- Ebben, Brudzynski (2008): *Motivations and Barriers to Exercise among College Students*. *Journal of Exercise Physiologyonline*

- <https://www.asep.org/asep/asep/EbbenJEPonlineOctober2008.pdf> Letöltve: 2021. 10. 31.
- Egli, Bland, Melton, Czech (2011): *Influence of Age, Sex and Race on College Students' Exercise Motivation of Physical Activity*. Journal of American College Health Vol. 59. No.5.
- European Commission (2018): *Special Eurobarometer 472 - Sport and physical activity*. Retrieved: 2021.10.28. from <https://www.europarc.org/wp-content/uploads/2020/01/Special-Eurobarometer-472-Sports-and-physical-activity.pdf>
- Fencl (2016): *Social Cognitive Theory to Understand Exercise Participation of College Students Enrolled in Online And Face-To-Face Sections of Fitness For Life Courses*. ProQuest LLC, Ann Arbor, MI
- <https://www.proquest.com/openview/8800eb8589fb496d2a3071007652d245/1?pq-origsite=gscholar&cbl=18750> Letöltve: 2021. december 02.
- Kilpatrick, Hebert, Bartholomew (2005): *College Students' Motivation for Physical Activity: Differentiating Men's and Women's Motives for Sport Participation and Exercise*. Journal of American College Health, Vol. 54, No. 2.
- https://www.researchgate.net/publication/7512227_College_Students%27_Motivation_for_Physical_Activity_Differentiating_Men%27s_and_Women%27s_Motives_for_Sport_Participation_and_Exercise Letöltve: 2021. 10. 31.
- McNamara, Swalm, Stearne, Covassin (2008): *Online Weight Training*. Journal of Strength and Conditioning Research, 22, 1164-1168.
- Markland, Ingledew: *The measurement of exercise motives: factorial validity and invariance across gender of a revised Exercise Motivations Inventory*. 223 Br J Health Psychol. 1997; 2(4):361–376
- Novák, Tarsoly-Huszár, Kovács (2021): *Az ELTE testneveléskurzusainak oktatása a Covid-19 árnyékában*. In: ELTE/PPK/Egészségfejlesztési és Sporttudományi Intézet (szerk.) Sport a Covid-19 pandémia árnyékában Budapest: Akadémiai Kiadó, pp 26-41 (2021)
- Sidman, Fiala, D'Abundo (2011): *Exercise Motivation of College Students in Online, Face-to-Face, and Blended Basic Studies Physical Activity and Wellness Course Delivery Formats*. [Journal of American College Health](#) 59(7):662-4
- Teixeira, Carraça, Markland, Silva, Ryan (2012): *Exercise, physical activity, and self-determination theory: a systematic review*. International Journal of Behavior Nutrition Physical Activity. **9**: 1. 1-30.