

CHANGES IN BODY WEIGHT AND BODY COPOSITION DURING STUDENT EXAM PERIOD

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Abstract: Most faculties at the University of Ljubljana support sport and recreation for students in various ways. At the Faculty of computer and information science and at the Faculty of chemistry and chemical technology we offer students the course "Sports Education". The course is running in the winter and summer semesters. During the exam period, students do not have the opportunity to be involved in organized sport activities from the faculty. We decided to investigate whether the students kept the habit of joining sport activity during that period and whether there were changes in body weight and body composition. **Methods:** We measured body weight and body composition, which included the muscle mass weight and percentage in fat mass. We used Tanita RD545 and a survey questionnaire for measurement. The first test was performed in the last week of the winter semester and the second in the first week of the summer semester, while the exam period lasts four weeks. **Results:** In the short period of four weeks, the students on average increased their body weight by 0.48 kg (range: min=-2.3kg, max=3.7kg), muscle mass by 0.11 (range max=-4.25kg, max =3.15kg), percentage in fat mass 0.22% (range max=-4.4%, min=3.3%). In the questionnaire, the students assessed that they were less physically active during the exam period. The results showed changes in body weight and body composition occurred in a relatively short period. The reason for this is probably less physical activity.

Key words: Physical activity, students, body weight, body composition.

INTRODUCTION

The student period is a specific period of life that involves a lot of studying and independent work, due to which a healthy lifestyle is often on the sideway. This is essential because the habits that students acquire during student period are the basis of their adulthood.

Students at the University are subjected to a sedentary lifestyle and represent the population of people who are most likely to keep a sedentary lifestyle in the future. Additionally, highly educated people in Slovenia spend most of their time in a sitting position (Pustivšek 2023). Students often neglect physical activity during the time of increased study obligations or during the examination period, which leads to decrease in physical activity of students (Rathony G., 2021). Additionally, Lee (2019) found that students sit for around 7.96 hours a day during their studies and possibly even more during the exam period. He notes that prolonged sitting time can affect an individual's increase in anxiety and depression. In addition, lack of movement increases the possibility of chronic pain of the musculoskeletal system (Vujčić I., 2018).

Students at the Faculty of Chemistry and Chemical Technology and students at the Faculty of Computer Science and Informatics have various options for physical activity during study period. Faculty ensures different programs and courses. The "Sports Education" course is at both faculties and is implemented during the winter and summer semesters. In this way, students can maintain and improve physical fitness.

The exam period lasts for four weeks. It leads to changed daily routine and increased stress due to preparations for exams (Fejes I., 2020). Aldo the University organises physical acitivties during the study period, students do not have the opportunity to be involved in organized sports activities from the faculty during the exam period. We decided to investigate whether the students kept their regular physical activity during the exam period and whether there were changes in body weight and body composition.

METHODS

75 students (43 male, 32 female) from Faculty of chemistry and chemical technology and Faculty of computer and information science of University of Ljubljana answered a questionnaire about physical activity frequencies (workouts) before and during exam period. Students measured their body weight and body composition before and after exam period. The test was performed in the last week of the winter semester and immediately after exam period in the first week first week of the summer semester.

RESULTS

We analyzed the data using the open source Jamovi Statistical Package (Version 2.3.21). The answers were analyzed by mixed repeated measures ANOVA, within subject pre and post measurements, between sex (female and male) subject sections. Focus was on workout frequencies, changes in body weight and body fat. For measuring body composition, we used body composition scale Tanita 545.

Changes in workout frequencies

We compared workout frequencies between male and female (Figure 1). Students were less physical active during exam period. The overall frequency of the average weekly workout decreased from 2.82 to 2.49. While for the male students it decreased from 3.1 to 2.7 and for the female students from 2.4 to 2.1.

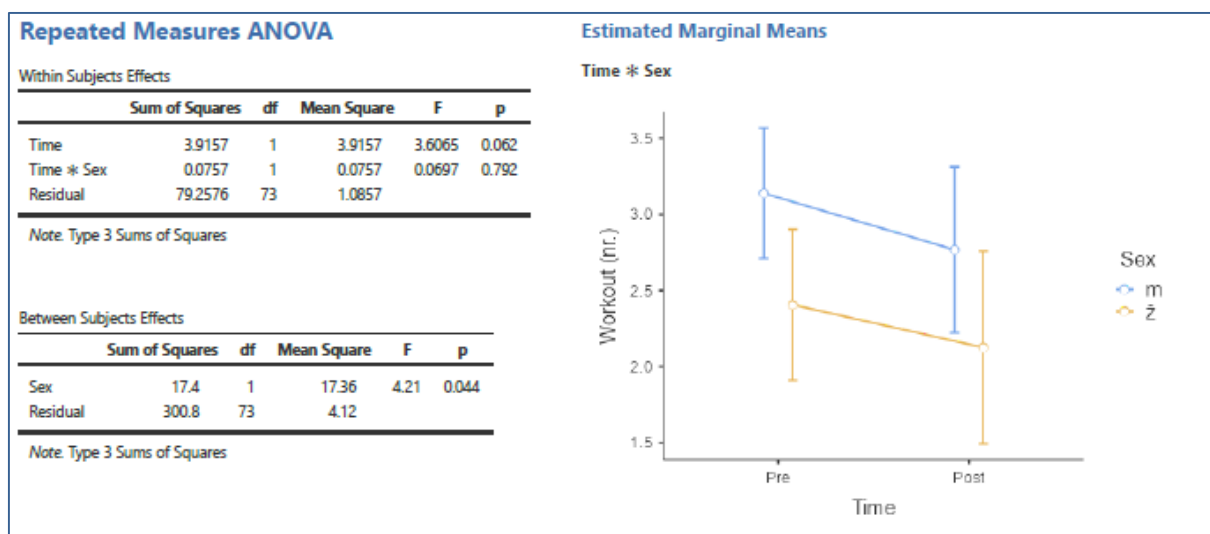


Figure 1. Changes in workout frequencies

Changes in body weight

There is an interaction between gender and time (Figure 2). All students on average gained 0.48 kg ($p < 0.01$). Male students on average gained 0.72 kg, while female students didn't gained body weight. Post hoc test confirmed differences between male group measurements but not in the female group.

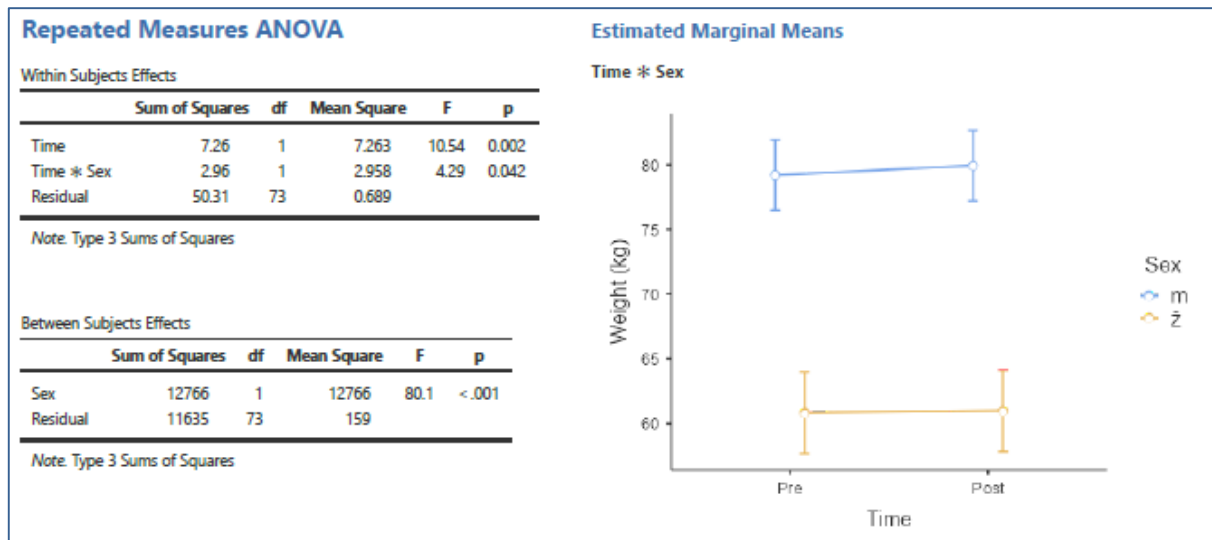


Figure 2. Changes in body weight

Changes in body fat

Male gained body fat by 0.5% while female did not change body fat percentage (figure 3.).

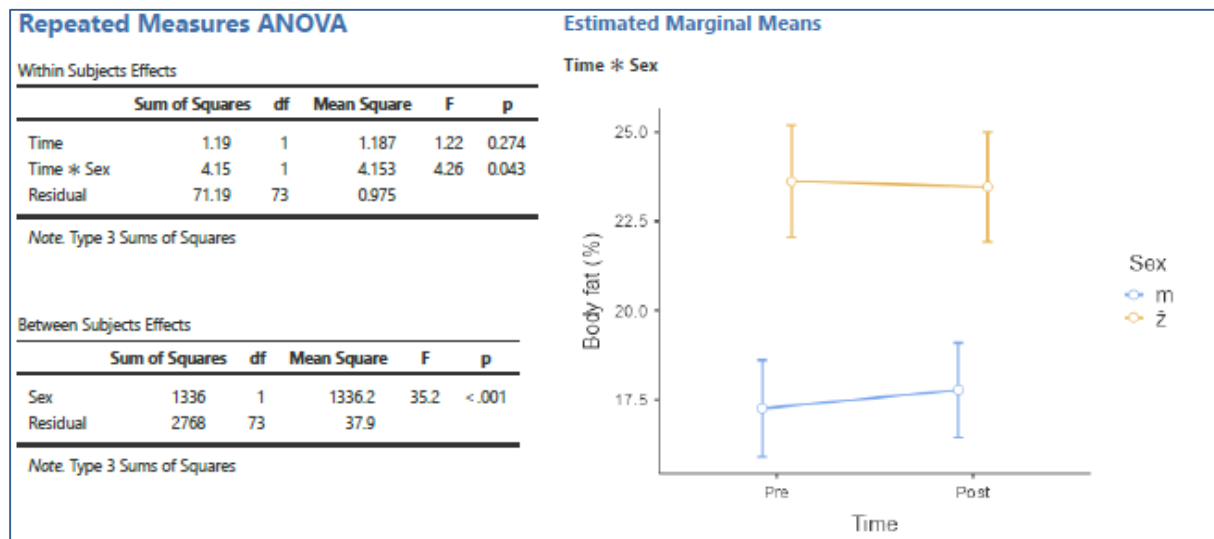


Figure 3. Changes in percentage of body fat

Changes in muscle mass

There was no changes in muscle mass.

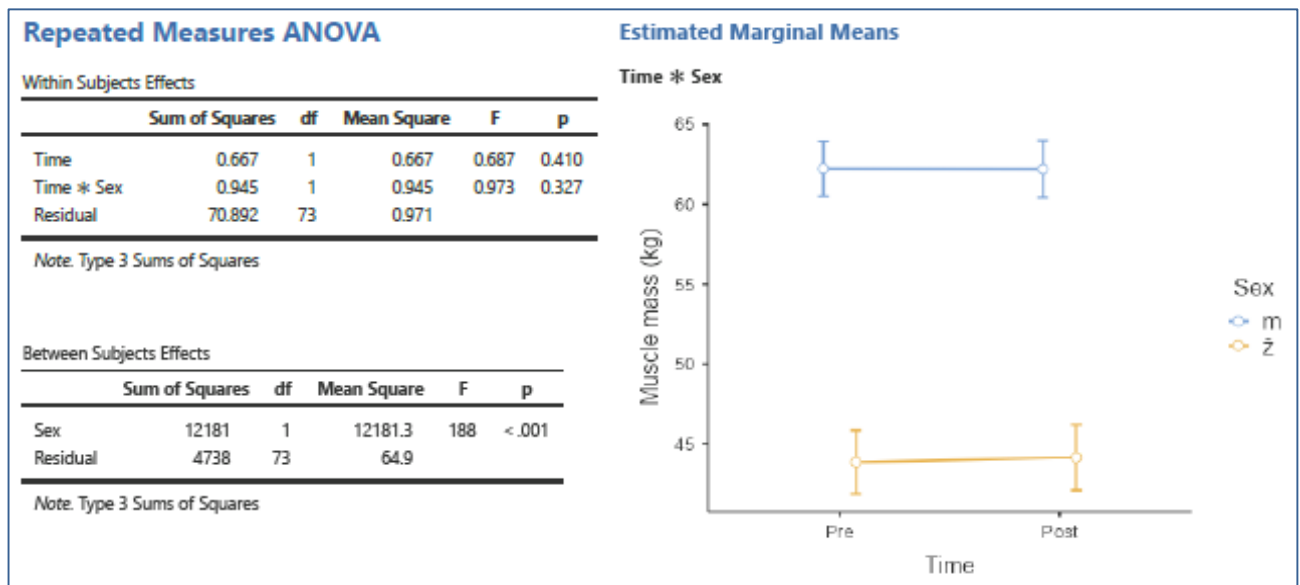


Figure 4. Changes in muscle mass

DISCUSSION

The examination period is a relatively short period and lasts only for four weeks. Nevertheless, it affects the movement patterns, habits of the individuals and changes in body weight and body composition. The purpose of this research is to discover how the changed daily routine and intensive studying during the exam period affects the healthy lifestyle habits of the individual, body weight and body composition. Our data showed that students reduced the number of weekly exercises during this period. These findings are consistent with research conducted by Rathony G. (2021). He found that students are less physically active during the exam period and perform a significantly lower daily number of steps than during the semester. We found greater changes in the lean body mass and body composition of male students. During this time, male students gained 0.72 kg and 0.5% fat mass. For female students there was no statistically significant changes. Most researchers have investigated students lifestyles throughout the entire student period or a single year during their studies. There are fewer who have researched the exam period and its impact on the individual. Friz J. (2021) followed the exam period and found that the stress on the individual increases during this period. Fejes I. (2020) found that increased stress during exam period increases the risk for cardiovascular complications even in the healthy young people.

We found some encouraging findings in female results and changes in the muscle mass of the students. We did not find significant changes on body weight and body composition in female students. In addition, we found that the number of exercises during the exam period is still satisfactory. Even during this period, students find time for physical activity in the range of 2-3 times a week. This is consistent with the research conducted by Kljajević V. et al. (2021), where they found a satisfactory level of physical activity and physical fitness of students.

CONCLUSION

Maintaining an active lifestyle during the student period is crucial for overall health, well-being, and academic success. However, the low physical activity during this period can have serious consequences for student's health and academic performance. During exam period, physical activity often becomes the first casualty as students devote themselves primarily to studying.

We showed changes in body weight and body composition due to the lack of organized physical activity and increased study workload during the examination period. This relatively short period affected both gender in frequency of physical activity and in change in body weight. More changes occurred in the male population, where body weight and percentage of fat mass increased during exam period.

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PROMJENA U TJELESNOJ TEŽINI I TJELESNOM SASTAVU U VRIJEME ISPITNOG PERIODA

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Sažetak: Većina fakulteta na Univerzitetu u Ljubljani podržava sport i rekreaciju za studente na različite načine. Na Fakultetu računarstvo i informatiku i na Fakultetu za kemiju i kemijsku tehnologiju nudimo studentima predmet »Športna vzgoja«. Predmet se izvodi u vrijeme zimskog i ljetnog semestra. U vrijeme ispitnog perioda, studenti nemaju mogućnost biti uključeni u organizirane sportske aktivnosti u organizaciji fakulteta. Odlučili smo provjeriti, da li su studenti u tom periodu zadržali naviku, da se bave sportom i dolazi li do promjena u tjelesnoj težini i sastavu tijela. Metode: Izveli smo mjerenja tjelesne težine i sastav tijela koji je obuhvatio težinu mišićne mase i masne tjelesne mase. Za mjerenje smo koristili Tanitu RD545 i anketni upitnik. Prvo testiranje je izvedeno zadnji tjedan zimskog semestra, a drugo prvi tjedan u ljetnom semestru. Ispiti period traje četiri tjedna. Rezultati: U relativno kratkom periodu od četiri tjedna studenti su u prosjeku povećali tjelesnu težinu 0,48kg (raspon: min= 2,3kg, max=3,7kg), mišićnu masu 0,11kg (raspon max=-4,25kg, max=3,15kg), postotak masne mase 0,22% (raspon max=-4,4%, min=3,3%). U anketnom upitniku su studenti ocijenili, da su u vrijeme ispitnog perioda bili manje tjelesno aktivni. Rezultati su pokazali, da su se u relativno kratkom periodu dogodile promjene u tjelesnoj težini i sastavu tijela. Razlog tome je vjerojatno manja tjelesna aktivnost.

Ključne riječi: Tjelesna aktivnost, studenti, tjelesna težina, sastav tijela.