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Research article

The influence of specialization and the level of physical activism on leisure options for students of the Faculty of Physical Education and Sports

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ABSTRACT: Leisure activities, their dynamics in ontogenesis and the way of managing the time allocated to them are a topic that is frequently researched. **Purpose**: to investigate students' attitudes, aiming at aspects related to forms of leisure, depending on specialization and level of physical activism, by applying a questionnaire. **Material and method**: The research took place in the academic year 2019-2020, on a number of 180 students of the Faculty of Physical Education and Sports in Galați. The differences for the pairs of independent specialty variables (PES / physical education and sport and PT / physical therapy), respectively physical activity (HLPA / high level of physical activity, and LLPA / low level of physical activity were analyzed, by applying the techniques of MANOVA and ANOVA calculation. **Results:** Multivariate analysis indicates significant effects of the physical activity variable on the items of the questionnaire for leisure budget factors, preferred leisure activities, leisure sports activities, and for the specialty variable significant effects are determined only at leisure sports activities, so the level of physical activism will generate more differences between the opinions expressed compared to the specialization of students. Univariate test results indicate significant F values ($P < 0.05$) for a number of items, with weaker values, dominant for PT and LLPA groups. Sports activities and socializing on the internet (defining variant of young people) are at the top, so they do not exclude each other. **Conclusion:** the students from the PES and HLPA groups stand out through a better organization of free time, high satisfaction of its capitalization, a greater involvement in the variants of active leisure and superior socialization, and those from the PT and LLPA groups allocate more time to watching on TV and using the internet.

Keywords: *physical activism, specialization, questionnaire, active and passive leisure options, opinions*

INTRODUCTION

Sedentarism among young people is becoming an increasingly obvious problem, as a direct negative effect of social transformations and acceleration of urbanization, being found a decrease in forms of active outdoor leisure (1). Recent studies identify the low interest of university students (women) in physical activity and an active lifestyle. Solutions to solve this situation are the variety of physical activities, the provision of quality sports facilities and the organization of sports competitions (2). Fighting against the sedentary lifestyle of university students through strength programs combined with aerobic effort are highlighted by (3).

The study conducted in the early 2000s by (4) identifies the directions for the involvement of young Europeans in various forms of leisure. Although it is believed that a larger amount of free time is influenced by the level of general welfare, the authors note a shorter time for Swiss compared to the population of another continent / USA, and the economic

differences between Western and Eastern Europe generate also peculiarities between the ways of spending free time. Another factor that influences the forms of leisure is the national culture and the specific way of organizing school activities. The option for a certain form of leisure often excludes or limits the possibilities of involvement in other forms of leisure. The extension of academic mobility will have to take into account the cultural contexts of foreign students, as a way to facilitate their integration into the new university environment (5).

Active leisure options (sports activities) have beneficial effects on the individual functional and mental component, but passive forms (computer, TV) have harmful effects on physical and professional performance (6). Physical activities based on exercises of varying intensity have a role in limiting chronic inflammation and increasing immunity (7). However, the forms of passive leisure are preferred by Spanish students / University of Huelva and the active variants (disco, sports, excursions, etc.) are less represented, but men have higher values of involvement in sports and video games (8). According to Taiwanese students, correct BMI values, physical activity and healthy eating habits are the 3 factors that determine self rated health (9). The more varied the leisure physical activities for teenagers, the more pronounced the physical activism will be in the coming years, especially among girls (10). For sports students (20-24 years old), the variety of leisure physical activities should be encouraged in order to promote an active lifestyle (11).

The active lifestyle at a young age will strongly influence the level of physical activism in the following stages, those involved in physical activities at 13, will maintain this lifestyle at 17, noting that this is especially true for Portuguese boys (over 40%), towards girls (under 20%) and 1/3 of the sedentary at the age of 13 will show the same attitude, regardless of gender, according to (12).

Awareness of sports skills at an early age (for women) is associated with the manifestation of a proactive attitude in adulthood, but younger siblings and smoking will cause negative associations with involvement in physical activities, and for men there are very important the extracurricular sports activities and favorable image / model generated by physically active parents. (13). Other authors identify as predictors of physical activity, environmental factors, relative autonomy, motivation, male gender, involvement in social activities (14). The sedentary lifestyle of British adults (average age 50) is caused by a complex of factors, which present at an early / young age are predictors of behaviors based on physical inactivity in adulthood: prepubertal stature, difficulties with segmental coordination / especially of hands, acquaintance / cognition, divorce of parents, placement in institutional care centers, belonging to a certain social class at birth, low level of parental education, poor household facilities, inactivity and poor sports skills, behavior problems, according to (15).

At the level of students in Spain / Madrid there are problems related to the accentuation of physical inactivity, over 55% of them do not fall to meet the standards related to LTPA (leisure time physical activity), proposed by (World Health Organization) / WHO, according to (16). Physical activity and proper diet are the basis of healthy behavior, but only a third of university students in Slovakia have an active lifestyle (at least one activity per week), the rest prefer the hypokinetic style, girls especially have irregular physical activities (17). The normal development of young people (19-26 years) is ensured by systematic physical activities, combined with an adequate diet.(18).

The genetic factor and the social environment are analyzed by (19), regarding their influence on the behavior related to leisure activities. Both factors, but especially the experiences with siblings in the family space outline the modalities of subsequent allocation of free time, being analyzed 5 areas of free time: physical activity, social activity, intellectual activity, family activity, passive activity.

The context of the Covid 19 pandemic has generated strong manifestations of anxiety for different sections of the population (20). The factors that can predict favorable behaviors for leisure physical activity for young Norwegians are identified by (21): positive athletic self-concept in adolescence and membership in a sports club, and smoking, depression

and obesity are indicators of low values of physical leisure.. Also in Norway, the research of (22) notes that the decrease in physical activism is accentuated (especially in men), as they approach adulthood, with sedentary teenagers having a high chance of maintaining this harmful style for life. The more teenagers experience physical activity, the more likely they are to be active later.

The time interval for practicing physical activity is important, the physical training programs based on high impact weight bearing exercise (jumping and running), applied for 4 months for middle-aged women (40 years) did not generate significant increases of bone density / bone mineral density (23). In contrast, increased weekly physical activity for premenopausal women results in a decrease in body mass and body fat ratio, especially in the torso (24). The importance of models offered to young people by parents and physical education teachers for a participatory attitude in the forms of active leisure is highlighted by (25). A good motivation of students in Spain for leisure physical activities is a cumulative result of 3 factors of influence: the physical education teacher, parents and colleagues / entourage, according to (26). The authors also emphasize the self-determining motivation of adolescents, as a factor that can support a behavior focused on participating in physical activities.

The skills trained in school during physical education lessons should facilitate the use of their skills in daily leisure physical activities, being based on motivating students and forming an autonomous behavior, according to (27). The leisure activities of young people are primarily focused on sports games. Teaching volleyball in school ensures the quality of the execution technique (28). Organized leisure physical activities have a positive effect on healthy living habits, for teenagers in Italy there is a reduction in harmful behaviors (alcohol and smoking) (29). Students with constant physical activism are noted for their low values of depression compared to their sedentary peers, and have a higher motivation for this type of activity (30).

The identification of the contribution of youth centers for the organization of leisure activities of young people in Sweden (12-14 years) is done by (31). The investigated subjects come from the category of multicultural suburbs and state that these organizations have a role to play in promoting healthy leisure activities, contributing to personal development, providing a good support environment and strengthening youth-oriented community actions.

The self-concept of adolescents in Western Australia (adolescent self concept) is strongly influenced by leisure activities, according to (32). Those who participate in structured leisure activities have general self-determination, along with a higher social and academic self concept. The participation in several forms of leisure (sports and non-sports activities) is more effective in terms of general self-assessment and increased social concept, than the option of involvement in a single form of activity. Frequent use of social networking sites is associated with a high self-concept, but investing in these sites shows low self-esteem. Structured activities (art, sports) offer increased exploration experiences and positive interaction with colleagues, compared to social networking sites.

The combination of regular physical activity and healthy eating habits are beneficial in terms of self-esteem of body attractiveness for Romanian high school students, 95% of boys have constant motor activities (33). Other research states that for young people in Romania there is a dominant involvement in physical activities at a young age (up to 12 years), but after this interval, concerns about forms of active leisure begin to be less, they are replaced by variants that involve the use of technology, with undesirable effects on lifestyle (34). Romanian adolescents (only 13%) note that the family is an important support in the formation of habits of physical activism, as a result of practicing physical exercises in this context (35). In the case of adolescents in Serbia, there is also a favorable involvement of young people in leisure physical activities, and the positive role models offered by parents generate a better participation in the forms of active leisure (36). The authors recommend that students become aware of the dangers of passive leisure (internet, TV, gaming). An interesting aspect is that the participation in structured activities

proposed by the school is dominant for rural students, and those in urban areas are more involved in structured extracurricular activities.

Problems generated by sedentary lifestyle and excessive focus on passive leisure options (especially TV) lead to the manifestation of high blood pressure, increased incidence of central obesity, increased triglyceride levels, reduced HDL values (good cholesterol). The values are associated with metabolic problems for adults / over 40s in Sweden, according to (37). The Covid 19 pandemic has caused major changes in the lifestyle of the population, with respiratory failure being one of the major causes associated with the risk of death (38). Other studies ((39) note that boys in Norway tend to spend more time on the computer (more than 2 hours a day) compared to girls, but compensates for this by engaging in high- and moderate-intensity physical effort. However, high BMI values are positively associated with screen time for boys, but surprisingly, negative associations are reported between BMD / bone mineral density and time spent in sedentary / computer activities.

The purpose of the study is to investigate the attitudes of the students of the Faculty of Physical Education and Sports, aiming at aspects related to forms of leisure, with the analysis of variations of opinion depending on the specialization and the level of physical activism.

MATERIAL AND METHOD

2.1. *Working hypotheses:*

H1: The values of the internal consistency coefficient (Cronbach alpha) support the fidelity of the measured features, at the level of the 4 factors of the questionnaire.

H2: There are significant differences between the average item scores for the independent variable specialty.

H3: There are significant differences between the average item scores for the independent variable physical activity.

2.2. *Participants*

The investigated subjects are 180 students of the Faculty of Physical Education and Sports from Galați (bachelor level), aged 22.34 ± 5.79 years, a group formed by random selection. At the level of this group, 6 independent variables were defined: gender, age, origin, BMI values, specialization and level of physical activism. The results of the study for the first 4 variables have already been published, the present study focusing on the presentation and analysis of the data of the last 2 variables: specialty (125 cases in PES specialization / physical education and sport, respectively 55 cases in PT / physical therapy) and physical activity (109 subjects with HLPA / high level of physical activity, respectively 71 cases with LLPA / low level of physical activity). The batch was surveyed by e-mail, the subjects being previously instructed on the purpose of the research and the confidentiality of personal data, the rules of scientific research and those involving the collection of data from human subjects being respected (40,41).

2.3. *The organization of the research*

The application and collection of questionnaires was carried out in the academic year 2019-2020, during the first semester, until the onset of the Covid 19 pandemic, so the results obtained are defining for the social context of that stage. Our investigation was designed for cross-sectional research, using a questionnaire composed of 85 items and subitems (closed answers only), structured on 4 distinguishing factors: leisure budget, leisure limiting factors, preferred leisure activities and leisure sports activities, designed and validated within the Research Center for Human Performance within the Faculty of Physical Education and Sports Galați. The measurement of the intensity of the investigated features was performed by assigning scores from 5 to 1, according to the Likert intensity scale. The large number of items does not allow the presentation of all the corresponding intensity

levels and an analysis of the percentages for each selected variant. Examples of quantifying the intensity of opinions in scores: 5 (Very important, Every time, Extremely strong influence), 4 (Important, Often, Strong influence), 3 (Medium in importance, Occasionally, Moderate influence), 2 (Less important, Rarely, Weak influence), 1 (Not important, Never, No influence).

2.4. *The statistical analysis of data*

The statistical analysis was based on the use of SPSS software (verse 24), in this case the following indicators were calculated: the values of the Alpha Cronbach indicator for each factor (related to the determination of internal consistency), multivariate analysis (MANOVA) to determine the influence of the 2 variables and the interaction between them on the answers on the factors of the questionnaire, the analysis of variance (ANOVA) at the level of each item separately with the use of the Bonferroni correction factor, the size effect values (η^2p). The interpretation of the significance between the differences of the means at the level of the resulting pairs for the two independent variables (PES / PT, respectively HLPA / LLPA) was also performed, with the setting of the confidence interval at 0.05, according to (42–47).

RESULTS

The values of the internal consistency coefficient (Cronbach alpha) indicate a good fidelity of the features measured with the help of the items at the level of each factor (for F1 / leisure budget = 0.803, for F2 / leisure limiting factors = 0.748, for F3 / preferred leisure activities = 0.750 and F4 / leisure sports activities = 0.812), so we can say that the first working hypothesis is confirmed.

Tables 1, 3, 5 and 7 present the results of the multivariate analysis / Multivariate tests, but also the influence of the interaction of the 2 independent variables defined at the level of each factor of the questionnaire. Tables 2,4,6 and 8 summarize the results of the analysis of variance / Univariate tests, but also the significance of the differences between the average scores for the pairs associated with the 2 independent variables, at the level of each item.

The influence of the 2 independent variables and their interaction on the answers to the F1 / leisure budget questions is summarized in Table 1. Only at the Physical activity level are signaled significant results, with F = 2.886, which corresponds to a threshold P = 0.007, and 10.6% of the variance of the items (dependent variable) is explained by the influence of this independent variable. For the Specialty variable and the combination of Specialty * Physical activity, no significant values of F (P> 0.05) are found, but also low scores of size effect (η^2_p).

At the level of factor 1 (leisure budget), the ANOVA values and the differences between the pairs resulting from table 2 do not show significant results for the independent variable *specialization* (F values are associated with P>0.05 thresholds). However, it is noted that PES students have slightly higher scores for leisure time, hours spent for favorite leisure activities, weekends out of town, and those in the PT group have better scores only for the importance of leisure. For the variable *level of physical activism*, however, significant differences are obtained between groups, those in the HLPA group have higher scores for leisure budget size (F = 4.085, P = 0.045), free time on working days (F = 5.359, P = 0.022) and hours allocated to favorite activities (F = 8.498, P = 0.004). They also have higher scores, but insignificant for weekends spent out of town and satisfaction in organizing free time. It is worth noting that LLPA students devote more time to passive leisure activities / Free time for TV and internet and that free time seems to be more important to them. At the level of this factor we can conclude that students with high physical activism / HLPA are more organized and satisfied with their free time, have a higher free time budget and do not spend so much time in front of screens (TV, computer).

Table 3 shows the results of the multivariate analysis (MANOVA) for the items of factor 2 (leisure limiting factors). Even if the values of F are in the 3 situations insignificant (P

<0.05), it is observed that the values of η^2_p are high for the 2 independent variables (19.1% of the item variance is attributed to specialization, 21.1% is attributed to the level of physical activism and only 14.9% to the interaction Specialty*Physical activity).

For F2 (leisure limiting factors), table 4 summarizes the results of the ANOVA analysis of variance and the significance of the resulting data pairs for each independent variable. At the level of the specialization variable there are only 2 items where significant differences are found between PES and PT students: (Stress / visits to relatives, friends, with higher values for PT, F = 8.856, P = 0.003), respectively (Inaccessibility / excursions, hiking, with higher values also for PT, F = 4.549, P = 0.034). The highest average scores for leisure time lost in both groups are associated with difficult homework and household activities, the lowest with working overtime. PT students spend more time with household activities and help given to others, and PES students with commute. The most stressful activities as values of average scores are generated by reading, visits to relatives-friends, shopping; the least stressful are music and walks in the park. PES students are more stressed than PT students by reading; PT students have higher stress scores for most activities, but without statistically significant differences. Among the most difficult activities to access are trips, shopping, going out with friends and going to the cinema, and the most accessible are the walks in the park, computer games, TV and socializing on the Internet, also without significant differences. For the variable level of physical activism, 3 data pairs with statistically significant differences are reported: (Limitation / household activities where LLPA have a higher score, with F = 6,646, P = 0.011), (Stress / various sports activities where LLPA also have a higher score, with F = 9.537, P = 0.002) and (Inaccessibility / various sports activities where it is natural for LLPA to have a higher score, with F = 10.855, P = 0.001). Those in the LLPA group lose more time with working overtime, household activities and commute, and HLPA students give a higher score to difficult topics, as a factor for limiting free time, being a little more stressed by TV, computer games, but with slightly lower values of the stress generated by socializing on the internet. At the level of both groups, the higher stress scores are also obtained by visits to relatives-friends and shopping, followed by TV, computer games, respectively reading / especially for HLPA, thus proving that reading is an increasingly rare and unattractive concern for young people under investigation. Both groups get the highest average score / about 3 (among the items of this factor) for the financial limitation of their favorite activities, which shows that students do not yet have the financial independence to meet all the needs related to leisure options. In the top of inaccessible activities are also excursions, hiking, shopping and going out with friends, but no significant differences are obtained between groups, except for sports activities.

Table 5 shows the results of the multivariate analysis (MANOVA) for the items of factor 3 (preferred leisure activities). Only the independent variable Physical activity generates significant influences on the subjects' responses to the factor items (F = 11,501, with P = 0.000 and 71.7% of the variance at the item level being explained by the influence of the independent variable). For the Specialty variable and the Specialty*Physical activity interaction, the values of F are associated with statistically insignificant thresholds (P> 0.05).

At the level of factor 3 (preferred leisure activities) in table 6, the values of F and the differences at the level of the PES / PT pair are significant only for 3 items, with superior results of the PES group: (Spending free time / schoolmates or entourage, with F = 6.002 and P = 0.015), (Daily activities / going out with friends, with F = 8.126 and P = 0.005), (Weekend activities / various sports activities, with F = 7.510 and P = 0.007). Both groups allocate the most leisure time scores for family, friends and life partners, and those in the PT group have a slightly higher inclination to spend their free time alone. In the top of the favorite daily activities is socializing on the internet, followed by sports activities, going out with friends and listening to music, and in the last place is the cinema / theater. There is a slight decrease in practicing sports activities during the weekend for both specializations, but for the other options (including TV, computer, internet socializing, etc.) are re-

ported increases over the weekend, but without statistically significant differences between groups. In terms of holidays, the preferences with high scores are for those at sea, in the mountains and at home, the latter aspect, combined with the low scores allocated to holidays abroad being a good indicator of the limited financial potential of students. It is also worth noting the slightly higher score assigned by the PT group for beach holidays. For the HLPA / LLPA pair, F values and significant difference thresholds (all in favor of the HLPA group) are reported for the following items: (Spending free time / schoolmates or entourage, with F = 12.628, P = 0.000), (Daily activities / going out with friends, with F = 6.839, P = 0.010), (Daily activities / cinema, theater, with F = 6.662, P = 0.011), (Daily activities / various sports activities, with F = 324.900, P = 0.000) , (Weekend activities / going out with friends, with F = 8.300, P = 0.004), (Weekend activities / listening to music, with F = 4.310, P = 0.039), (Weekend activities / various sports activities, with F = 119.784 , P = 0.000). LLPA students are more likely to spend more time with family and life partners, spend more time reading, visiting friends, socializing on the Internet, TV, and computer games, daily and on weekends, but are less concerned about listen to music or movie / theater. The highest scores given by both groups to their favorite activities are related to socializing on the internet, going out with friends, listening to music and shopping, and those in the HLPA group have very high scores related to physical activities. The lowest values are noted for reading, visits to friends, cinema / theater and excursions, hiking, at the level of both groups. It is gratifying the fact that TV and computer games are not in the top of the favorite activities, with average scores allocated, so the studied groups do not yet show dependence on screening technology and have diversified leisure concerns. Regarding the holidays, there is a slight advantage of the HLPA group for the sea and mountain variants, respectively a slight preference for home and countryside holidays for those in the LLPA group, but without significant differences (P> 0.05).

Table 7 shows the results of the multivariate analysis (MANOVA) at the level of factor 4 items (leisure sports activities). The significant influence of the independent variables Specialty and Physical activity on the answers to the analyzed items is reported (F = 1.668, P = 0.005, with 15.9% of the variance of the dependent variables explained by the effect of the variable Specialty, respectively F = 25.488, P = 0.000 , with 74.3% of the variance of the dependent variables explained by the effect of the variable Physical activity). The interaction between the variables Specialty * Physical activity does not generate significant effects, the value of F is associated with a P = 0.345.

Table 8 summarizes the results of the analysis of variance (ANOVA), the differences between the averages of the pairs formed and the significance thresholds for the items of factor 4 (leisure sports activities). At the level of this factor, the most significant differences are obtained for the data pairs obtained (especially for comparisons between HLPA and LLPA), being the part of the questionnaire in which most of the average scores of the investigated groups capture different intensities of the answers provided. The comparison between the PES and PT groups identifies only two items with significant differences in favor of the PES group: (The importance of sports activities, with F = 6.251, P = 0.013), respectively (Practice / Sports games, with F = 10.186, P = 0.002). And for most of the other items analyzed, higher values of the PES group are identified, except for Practice / Jogging, Practice / swimming and Practice / cycling, rollerblading where those from PT have slightly better scores, so the group of PES students has concerns more much oriented towards sports physical activities and appreciate more the effects of different sports on body health and harmony, even if most of the differences between groups are not statistically significant (P> 0.05). The highest scores of both groups related to favorite sports activities are focused on sports games, fitness / bodybuilding, jogging, and the lowest are allocated to swimming and contact sports. Instead, swimming has the best average values as an activity that optimizes health and ensures good physical development, followed by fitness-bodybuilding, sports games and jogging, and the lowest score is obtained by Tennis or table tennis.

At the level of the HLPA / LLPA pair, most of the significant differences for this factor are registered, most values of F are associated with P thresholds <0.05. Active lifestyle and involvement in physical activity are the dominant features of the HLPA group, which obtains the highest scores for almost all items related to the practice of various sports and their influences on health, with 2 exceptions where the LLPA group has slightly better scores, but statistically insignificant: Health effects / Tennis or table tennis and Health effects / cycling, rollerblading. These results are in accordance with the particularities of the 2 groups, with the lifestyle and with the different valorization of the investigated sports activities.

DISCUSSION

The analysis of the main varieties of physical leisure preferred in different regions of the world is done by (48). At European level and in Africa, football (10%) and running (over 9%) dominate. These, along with walking (over 40% in SE Asia and the Western Pacific) and swimming are the most common and accessible forms, with variations generated by national and regional particularities. Other sources indicate the favorable role of tourism, climate and holidays in optimizing mental health and boosting the immune potential, (49–51). We have identified the dominant involvement of students in sports games, but fitness options have relatively close scores to running.

Young people who participate in diversified social activities have lower values of scores that measure the level of depression and anxiety, having more clearly outlined a purpose in life and a low incidence of suicidal thoughts (52). For university students (Technical University of Cluj Napoca) involvement in sports physical activities is an opportunity to socialize, meet new people and reduce stress levels (53).

PA programs offered to students in Polish schools must take into account the individual characteristics of the students: shortcomings in preparation and strengths, native skills, attractiveness to certain proposed options, in order to facilitate higher values of involvement in the effort and avoid risks of manifestation of some diseases, generated by the avoidance / dodging of physical effort (54). For young people in Australia (under the age of 16), associations are found between low levels of stress / depression, reduced screening time and involvement in school teams / individual physical activity (55). For teenagers in Germany (over the age of 14) there is a higher degree of satisfaction after practicing leisure sports activities and an improvement in life on many levels (health, work, leisure, relationships, etc.) (56).

A study made on young people in Finland (11-15 years old) showed that those involved in (leisure time physical activity) have more physical injuries compared to subjects who were only involved in curricular physical education lessons, but an incidence 30% less of these problems compared to those involved in high-performance physical activities in sports clubs (57). The conclusion is reinforced by the study of (58), that identifies an increased rate of medical problems generated by sports leisure for adolescents on several continents (15-16 years), compared to injuries generated in the lessons of physical education. Most injuries are found in groups of extremes of physical activism (those that make a lot of effort and have older injuries, respectively those lacking motor experience and are physically fragile).

The participation of young people in the Czech Republic in (OLTA / organized leisure-time activities) has favorable aspects for reducing risky and harmful behaviors: alcoholism, smoking, banned substances, etc., with increasing school results, reducing school dropout (especially for girls), but with obvious manifestations of aggressive behavior, especially for boys (59,60). Other authors analyze the problems of young people related to unhealthy behaviors: alcohol consumption is identified for adolescents in Crete (14-19 years), more than 75% of boys and 25% of girls have this problem, and their school results are poorer , having even more cases of suspended subjects (61).

Obesity affects the fitness level and the intellectual performance for handball players in Qatar, according to (62). Obese people with hypertension / HT may still have high levels

of physical fitness (PF) and physical activity, but the association with diabetes greatly decreases the level of PF (63).

For high school teenagers in Hungary, values are identified that highlight a good involvement in physical leisure time (over 85% respond favorably). The average values of free time on weekends reach over 6 hours. For boys, however, there is a greater involvement in watching TV, computer and video games with violent or sports content, and the preference for fast food and carbonated drinks are elements that predispose to chronic diseases (64). Excess TV, homework and computer games are the main consumers of leisure time for teenagers in Scotland, with TV being used primarily on weekends (over 4 hours), according to (65). Similar research undertaken by (66) on U.K. teen girls also indicates a dominance of TV programs, but with less pronounced use of computers, and the average value allocated to daily activities is 45 minutes during the week and 53 minutes on weekends. Our research also indicates fairly high values of time spent on TV, video games, listening to music and very high scores of socializing on the Internet.

Problems with sedentary behavior for young people in Australia are identified by (67), which notices that sedentary activities (socializing, homework, video games, reading, TV, etc.) take up 45% of the time at the age of 13, and at the age of 14-15 it rises alarmingly to 65%. The young people in Brazil (13-18 years old) also prefer TV, over 70% of girls and 66% of boys thus losing more than 2 hours daily, being indicated to change these passive forms of leisure with productive and useful variants, according to (68). Sedentary lifestyle for young people in Uganda is reported in 54% of those surveyed (they do not meet the minimum standards of physical effort), with associations between physical inactivity, age and education level (69). Nearly a quarter of high school students in Lima / Peru enjoy internet browsing, video games and TV (over 2 hours / day) as their favorite leisure activities, which affects their school results (70). The sedentary behavior of young people aged 8-19 is analyzed by (71), that identifies for them problems related to academic performance, and the restriction of these harmful forms of leisure is beneficial for them. For medical students (Saudi Arabia) are identified as favorite activities social networks and movies (for women), the Internet, spending time with family. Unfortunately, less than 5% of those surveyed engage in physical activity with values above 30 min / day (72).

Despite all these problems reported, the authors (73) does not detect significant differences in time spent on homework, TV and computer games between active and sedentary Spanish adolescents. This idea is also supported by the study of (74), which does not lead to significant associations between leisure physical activities and watching TV programs for teenagers aged 10-15, so the restrictions imposed on watching TV will not necessarily increase the time allocated to PA. Even if we obtained higher values of students' involvement in physical effort, this aspect cannot be generalized, their specialization being the explanation of these favorable scores.

The use of video games for vocational students leads to a limitation of health related quality of life, according to (75), but other studies also indicate a number of favorable aspects: they promote an active lifestyle for university students, being useful in the field of physical education (76). The use of video games (especially for 11-15 year old boys) is a problem for the cases that allocate more than 2-4 hours a day of entertainment to this variant, due to the non-involvement of the parents (77). The time spent by young people in China (11-16 years) in front of the screen (Screen time / ST), combined with the limitation of vigorous physical activity (VPA) generates strong associations with the manifestation of depressive and anxious states, but also the dissatisfaction of school life for the studied groups, psychological problems etc. (78).

The verification of the influences exerted by parents and friends, as well as the way in which adolescents express their self-perception, on their involvement in leisure activities is studied by (79). The authors find that 49% of the variance of physical activity is explained by the direct effects of their beliefs and values / skills, respectively by the indirect effects of friends and parents, with similar results for both sexes. Our study shows that

free time spent with family and entourage is important, with high scores being allocated to these options.

The link between women's sense of security and their perception of the factors associated with the urban environment (visibility, brightness, surface use and vegetation density) has recently been investigated in Barcelona by (80), given that leisure physical activities are important in ensuring the well-being and health of the urban population. The quality of green spaces and distances less than 750 m from schools are factors that determine the involvement of young people in forms of sports leisure (81). Increased distances to locations for physical activities will lead to less involvement of young people, and environmental factors (quality of environment, urban routes, bike paths, study environment, network connectivity, etc.) condition participation in various forms of leisure (82). The peculiarities of the neighborhoods in Dortmund / Germany influence the forms of leisure of young people. For immigrants from poor neighborhoods, unstructured leisure activities dominate, with manifestations of delinquent behavior, as a result of poor family supervision, according to (83). As the neighborhood environment is perceived to be safer, the chances of teenage girls in the Czech Republic and Poland to take longer walks are increased, with safe environments generating over 11,000 steps / day, according to (84).

For Chinese adolescents (Shanghai), the motivation for moderate to vigorous physical activity is positively associated with the support of autonomous activities by family / parents, teachers, and schoolmates, according to (85). For young people in Canada, the study of (86) determines the role of fitness clubs in developing the motivation for physical effort, with beneficial effects on the continuity of leisure activities in the future. Enrollment and consistent participation in physical activity in sports centers is motivated by achieving and maintaining a high level of fitness, according to (87). Body Jump programs (as a form of fitness with music background) are a good form of active leisure, with beneficial effects on body composition and fitness indicators for women (88). Physical activities based on football juggling, scheduled for young people aged 18-20 for 10 weeks, have the effect of improving working memory (89).

For young people in Norway, the reasons for participating in leisure activities are very much related to the feeling of competence related to those efforts. If the physical activities result in repeated failures, then the tendency to abandon them is high, and in adulthood the passive variants (activities with friends, computer, video games, etc.) will dominate. In the case of adults, there is an involvement correlated with the success in the activity, the higher qualification and the selection of the participants in the activities according to the demonstrated competences (90).

Other authors (91), identifies the relationship between engaging in physical activity and the spiritual-religious dimension for young people in the Czech Republic. This category participates in various leisure options, has cultural and artistic interests, reads more, has less time for TV and computer games, has a more balanced lifestyle and involvement in physical leisure. The relationship between mental well-being and subjective health in adults in Finland (under 50) is studied by (92). Activities in nature will lead to better emotional and social well-being, endurance physical activities will positively influence subjective health, and walking has correlations with social and psychological well-being. Systematically and continuously planned physical activities for students with sports specialization have a role in improving the quality of sleep (93)

The limits of the study and new directions of research

The size of the questionnaire and the large number of independent variables can be seen as a limiting factor of the study, as they do not allow the presentation of the whole set of resulting data, but only an approach on one or more distinct variables. A better image of the research therefore implies the consultation of the other 2 published works, for the 4 variables that are missing from this study (94,95). The data provided by the questionnaire in the pre-pandemic stage do not indicate the way in which the students changed their behaviors related to leisure activities during Covid 19, so a replica of the study would

allow a thorough investigation of these inevitable and necessary changes to adapt to an unforeseen context. The use of various simple physical tests as exercises to limit sedentary lifestyle and improve the quality of life, adapted to the conditions at home in the context of the Covid pandemic 19 are proposed by (96), given that the forms of passive leisure are more tempting in this case. Physical activity during the pandemic for students from Taiwan has led to improved well-being, mental health and quality of life, according to (97). The questionnaire can be applied to other groups / university specializations (that have other concerns and visions of capitalization of leisure forms), but also to groups made by age categories, to capture the common aspects and major variations of different generations.

CONCLUSIONS

The results obtained are a good indicator of the differences of opinion that exist between the 2 specializations and at the level of the groups of physical activism, for the investigated subjects. The large number of items allowed a thorough exploration of the investigated problem, providing relevant information on the lifestyle for the tested group. The multivariate analysis indicates significant effects of the *physical activity* variable on the items of the questionnaire for factors F1, F3, F4, and for the *specialty* variable significant effects are determined only at the level of factor F4, so the level of physical activism will generate more differences between the opinions expressed compared to the specialization of students. For the *specialty*physical activity* interaction no significant effects were found on any factor in the questionnaire. The values of F and the differences between the pairs of independent variables (PES and PT, respectively HLPA and LLPA) indicate significant thresholds ($P < 0.05$) only for some of the items, so working hypotheses 2 and 3 are partially confirmed.

At the F1 (leisure budget) level, the superior satisfaction of HLPA students in terms of leisure organization and the fact that they have a higher leisure budget (which shows that this group has a better organization of leisure activities) is noticeable. Those in the LLPA group stand out for the importance given to passive forms of leisure (TV and internet).

For F2 (leisure limiting factors) the difficulty of homework and housework are the main causes of wasted free time for both groups (PES and PT), but those in the PES group are more limited by the commute in capitalizing on free time. In the top of the stressful activities are reading, visits, shopping, and those in the PES group are more stressed by reading than the PT group. Financial constraints related to preferred activities is a problem reported for groups (HLPA and LLPA), and the level of stress generated by physical activities and their inaccessibility are significantly higher for the group LLPA ($P < 0.05$).

At the level of F3 (preferred leisure activities) there are statistically significant results of F ($P < 0.05$) in favor of the PES group compared to PT, a situation that is maintained in the HLPA / LLPA pair, for spending free time with colleagues, going out in city with friends, sports activities on weekends, so socializing needs are stronger for the physically active. For those in the PT group, there is a slight tendency to be lonely. Sports activities and socializing on the internet (the defining variant of young people) are at the top, so they do not exclude each other. At the level of the HLPA / LLPA groups, there are registered low scores for reading, visits, cinema, and TV and computer games are not in the top of preferences, so this group is not dependent on technology. Those in the HLPA group prefer vacations at the seaside and in the mountains, and those in the LLPA group prefer vacations at home and in the countryside.

The last factor (leisure sports activities) signals 2 significantly higher values ($P < 0.05$) for the PES group: the importance of physical activities and the practice of sports games, and the PT group has better values for swimming, jogging and cycling / rollerblading. The differences in the HLPA and LLPA groups are mostly significant in favor of the HLPA, which supports the importance of physical effort for this group. Swimming is a less practiced option, but with beneficial effects on body appearance and health.

Table 1. The results of the Multivariate Tests[a] (MANOVA) / F1(leisure budget)

Effect	λ	F	Hypothesis df	Error df	Sig.	η^2_p	Observed Power
Speciality	0.991	0.228[b]	7.000	170.000	0.978	0.009	0.114
Physical activity	0.894	2.886[b]	7.000	170.000	0.007	0.106	0.919
Speciality* Physical activity	0.976	0.601[b]	7.000	170.000	0.755	0.024	0.254
a. Design: Speciality + Physical activity + Speciality*Physical activity							
b. Exact statistic							
λ-Wilk's lambda; F-Fisher test; df-degrees of freedom; Sig.-level of probability; η^2_p-partial eta squared							

Table 2. Univariate test results (ANOVA) and pairwise comparison of average values for factor 1 (leisure budget)

Dependent variable	Group	Mean	Std. Error	a-b	F(1,176)	Sig[b].	η^2_p	Observed Power
F1.1 Leisure budget size	a. PES	3.216	0.078	0.062	0.211	0.647	0.001	0.074
	b. PT	3.154	0.111					
F1.2 Free time on working days	a. PES	3.205	0.077	0.051	0.143	0.706	0.001	0.066
	b. PT	3.154	0.110					
F1.3 The importance of free time	a. PES	4.042	0.067	-0.060	0.258	0.612	0.001	0.080
	b. PT	4.101	0.096					
F1.4 Hours allocated to favorite activities	a. PES	2.791	0.076	0.106	0.637	0.426	0.004	0.125
	b. PT	2.686	0.108					
F1.5 Free time for TV and internet	a. PES	2.837	0.068	0.003	0.000	0.982	0.000	0.050
	b. PT	2.835	0.097					
F1.6 Weekends spent out of town	a. PES	2.827	0.082	0.059	0.168	0.682	0.001	0.069
	b. PT	2.768	0.117					
F1.7 Satisfaction in organizing free time	a. PES	3.336	0.077	0.002	0.000	0.991	0.000	0.050
	b. PT	3.334	0.109					
F1.1 Leisure budget size	a. HLPA	3.323	0.093	0.275*	4.085	0.045	0.023	0.520
	b. LLPA	3.048	0.100					
F1.2 Free time on working days	a. HLPA	3.335	0.091	0.311*	5.359	0.022	0.030	0.634
	b. LLPA	3.024	0.098					
F1.3 The importance of free time	a. HLPA	3.999	0.080	-0.146	1.541	0.216	0.009	0.235
	b. LLPA	4.144	0.086					
F1.4 Hours allocated to favorite activities	a. HLPA	2.931	0.090	0.386*	8.498	0.004	0.046	0.826
	b. LLPA	2.546	0.097					
F1.5 Free time for TV and internet	a. HLPA	2.753	0.080	-0.166	1.980	0.161	0.011	0.288
	b. LLPA	2.919	0.086					
F1.6 Weekends spent out of town	a. HLPA	2.869	0.098	0.143	0.994	0.320	0.006	0.168
	b. LLPA	2.726	0.105					
F1.7 Satisfaction in organizing free time	a. HLPA	3.436	0.091	0.201	2.269	0.134	0.013	0.322
	b. LLPA	3.234	0.098					
*. The mean difference is significant at the .05 level.								
b. Adjustment for multiple comparisons: Bonferroni.								

Table 3. The results of the Multivariate Tests[a] (MANOVA) / F2(leisure limiting factors)

Effect	λ	F	Hypothesis df	Error df	Sig.	η^2_p	Observed Power
Specialty	0.809	1.252[b]	28.000	149.000	0.196	0.191	.915
Physical activity	0.789	1.425[b]	28.000	149.000	0.092	0.211	.953
Specialty* Physical activity	0.851	0.933[b]	28.000	149.000	0.567	0.149	.778
a. Design: Specialty + Physical activity + Specialty*Physical activity							
b. Exact statistic							
λ-Wilk's lambda; F-Fisher test; df-degrees of freedom; Sig.-level of probability; η^2_p-partial eta squared							

Table 4. Univariate test results (ANOVA) and pairwise comparison of mean values for factor 2 (leisure limiting factors)

Dependent variable	Group	Mean	Std. Error	a-b	F(1,176)	Sig[b].	η^2_p	Observed Power
F2.1a Limitation / working overtime	a. PES	1.970	0.108	0.066	0.122	0.727	0.001	0.064
	b. PT	1.904	0.154					
F2.1b Limitation / difficult homework	a. PES	2.766	0.074	0.031	0.056	0.813	0.000	0.056
	b. PT	2.735	0.105					
F2.1c Limitation / household activities	a. PES	2.562	0.106	-0.148	0.636	0.426	0.004	0.125
	b. PT	2.710	0.152					
F2.1d Limitation / commute	a. PES	2.113	0.107	0.331	3.191	0.076	0.018	0.427
	b. PT	1.781	0.152					
F2.1e Limitation / help given to others	a. PES	2.209	0.088	-0.118	0.587	0.445	0.003	0.119
	b. PT	2.326	0.126					
F2.2a Stress / going out with friends	a. PES	1.228	0.061	-.208	3.876	0.051	0.022	0.499
	b. PT	1.436	0.086					
F2.2b Stress / reading	a. PES	2.156	0.101	0.307	3.021	0.084	0.017	0.409
	b. PT	1.849	0.145					
F2.2c Stress /listening to music	a. PES	1.408	0.068	0.131	1.226	0.270	0.007	0.196
	b. PT	1.277	0.097					
F2.2d Stress / cinema, theater	a. PES	1.330	0.069	-0.078	0.413	0.521	0.002	0.098
	b. PT	1.407	0.099					
F2.2e Stress / various sports activities	a. PES	1.365	0.065	-0.166	2.162	0.143	0.012	0.310
	b. PT	1.531	0.093					
F2.2f Stress / walks in the park	a. PES	1.168	0.046	-0.085	1.152	0.285	0.007	0.187
	b. PT	1.253	0.065					
F2.2g Stress / visits to relatives, friends	a. PES	1.785	0.097	-0.503*	8.856	0.003	0.048	0.841
	b. PT	2.288	0.138					
F2.2h Stress / socializing on the internet	a. PES	1.653	0.080	-0.068	0.238	0.626	0.001	0.077
	b. PT	1.721	0.115					
F2.2i Stress / TV, computer games	a. PES	1.744	0.103	-0.275	2.352	0.127	0.013	0.332
	b. PT	2.019	0.147					
F2.2j Stress / excursions, hiking	a. PES	1.323	0.062	-0.037	0.120	0.730	0.001	0.064
	b. PT	1.361	0.089					
F2.2k Stress / shopping	a. PES	2.066	0.099	-0.102	0.346	0.557	0.002	0.090
	b. PT	2.167	0.141					
	a. PES	2.934	0.077	-0.190	2.013	0.158	0.011	0.292

F2.3 Financial limitation of preferred activities	b. PT	3.125	0.110					
F2.4a Inaccessibility / going out with friends	a. PES	2.563	0.067	-0.094	0.651	0.421	0.004	0.126
	b. PT	2.656	0.095					
F2.4b Inaccessibility / reading	a. PES	1.802	0.071	0.219	3.099	0.080	0.017	0.417
	b. PT	1.584	0.102					
F2.4c Inaccessibility /listening to music	a. PES	1.563	0.074	0.015	0.015	0.904	0.000	0.052
	b. PT	1.547	0.105					
F2.4d Inaccessibility / cinema, theater	a. PES	2.557	0.069	-0.053	0.193	0.661	0.001	0.072
	b. PT	2.610	0.099					
F2.4e Inaccessibility / various sports activities	a. PES	2.107	0.073	-0.203	2.571	0.111	0.014	0.358
	b. PT	2.310	0.104					
F2.4f Inaccessibility / walks in the park	a. PES	1.192	0.040	0.080	1.152	0.285	0.007	0.187
	b. PT	1.111	0.056					
F2.4g Inaccessibility / visits to relatives, friends	a. PES	1.533	0.065	-0.008	0.006	0.940	0.000	0.051
	b. PT	1.541	0.093					
F2.4h Inaccessibility / socializing on the internet	a. PES	1.413	0.059	-0.003	0.001	0.972	0.000	0.050
	b. PT	1.416	0.084					
F2.4i Inaccessibility / TV, computer games	a. PES	1.269	0.049	0.033	0.149	0.699	0.001	0.067
	b. PT	1.236	0.070					
F2.4j Inaccessibility / excursions, hiking	a. PES	3.120	0.074	-0.275*	4.549	0.034	0.025	0.564
	b. PT	3.395	0.106					
F2.4k Inaccessibility / shopping	a. PES	2.827	0.069	-0.187	2.390	0.124	0.013	0.337
	b. PT	3.013	0.099					
F2.1a Limitation / working overtime	a. HLPA	1.862	0.128	-0.150	0.636	0.426	0.004	0.125
	b. LLPA	2.012	0.138					
F2.1b Limitation / difficult homework	a. HLPA	2.780	0.088	0.058	0.203	0.653	0.001	0.073
	b. LLPA	2.722	0.094					
F2.1c Limitation / household activities	a. HLPA	2.397	0.126	-0.477*	6.646	0.011	0.036	0.727
	b. LLPA	2.874	0.136					
F2.1d Limitation / commute	a. HLPA	1.842	0.126	-0.209	1.267	0.262	0.007	0.201
	b. LLPA	2.051	0.136					
F2.1e Limitation / help given to others	a. HLPA	2.184	0.105	-0.167	1.184	0.278	0.007	0.191
	b. LLPA	2.351	0.112					
F2.2a Stress / going out with friends	a. HLPA	1.344	0.072	0.025	0.055	0.815	0.000	0.056
	b. LLPA	1.319	0.077					
F2.2b Stress / reading	a. HLPA	2.135	0.120	0.265	2.249	0.135	0.013	0.320
	b. LLPA	1.870	0.129					
F2.2c Stress /listening to music	a. HLPA	1.414	0.081	0.144	1.478	0.226	0.008	0.227
	b. LLPA	1.270	0.087					
F2.2d Stress / cinema, theater	a. HLPA	1.456	0.082	0.175	2.107	0.148	0.012	0.303
	b. LLPA	1.281	0.088					
F2.2e Stress / various sports activities	a. HLPA	1.273	0.077	-0.350*	9.537	0.002	0.051	0.867
	b. LLPA	1.623	0.083					
F2.2f Stress / walks in the park	a. HLPA	1.224	0.054	0.026	0.110	0.741	0.001	0.063
	b. LLPA	1.197	0.058					
F2.2g Stress / visits to relatives, friends	a. HLPA	2.031	0.115	-0.010	0.004	0.951	0.000	0.050
	b. LLPA	2.041	0.124					
F2.2h Stress / socializing on the internet	a. HLPA	1.675	0.095	-0.024	0.030	0.862	0.000	0.053
	b. LLPA	1.700	0.102					
F2.2i Stress / TV, computer games	a. HLPA	2.013	0.122	0.263	2.150	0.144	0.012	0.308
	b. LLPA	1.750	0.131					
F2.2j Stress / excursions, hiking	a. HLPA	1.310	0.074	-0.063	0.340	0.561	0.002	0.089
	b. LLPA	1.374	0.079					

F2.2k Stress / shopping	a. HLPA	2.121	0.118	0.010	0.003	0.953	0.000	0.050
	b. LLPA	2.111	0.126					
F2.3 Financial limitation of preferred activities	a. HLPA	3.020	0.091	-0.018	0.018	0.892	0.000	0.052
	b. LLPA	3.039	0.098					
F2.4a Inaccessibility / going out with friends	a. HLPA	2.623	0.079	0.027	0.055	0.815	0.000	0.056
	b. LLPA	2.596	0.085					
F2.4b Inaccessibility / reading	a. HLPA	1.693	0.085	0.001	0.000	0.995	0.000	0.050
	b. LLPA	1.693	0.091					
F2.4c Inaccessibility /listening to music	a. HLPA	1.541	0.087	-0.027	0.043	0.835	0.000	0.055
	b. LLPA	1.568	0.094					
F2.4d Inaccessibility / cinema, theater	a. HLPA	2.526	0.082	-0.115	0.911	0.341	0.005	0.158
	b. LLPA	2.641	0.088					
F2.4e Inaccessibility / various sports activities	a. HLPA	2.000	0.086	-0.417*	10.855	0.001	0.058	0.906
	b. LLPA	2.417	0.093					
F2.4f Inaccessibility / walks in the park	a. HLPA	1.173	0.047	0.044	0.401	0.527	0.002	0.097
	b. LLPA	1.130	0.050					
F2.4g Inaccessibility / visits to relatives, friends	a. HLPA	1.466	0.078	-0.142	1.557	0.214	0.009	0.237
	b. LLPA	1.608	0.083					
F2.4h Inaccessibility / socializing on the internet	a. HLPA	1.367	0.070	-0.095	0.854	0.357	0.005	0.151
	b. LLPA	1.462	0.075					
F2.4i Inaccessibility / TV, computer games	a. HLPA	1.230	0.058	-0.046	0.283	0.595	0.002	0.083
	b. LLPA	1.275	0.063					
F2.4j Inaccessibility / excursions, hiking	a. HLPA	3.250	0.088	-0.015	0.013	0.908	0.000	0.052
	b. LLPA	3.265	0.094					
F2.4k Inaccessibility / shopping	a. HLPA	2.907	0.082	-0.025	0.044	0.834	0.000	0.055
	b. LLPA	2.933	0.088					
*. The mean difference is significant at the .05 level.								
b. Adjustment for multiple comparisons: Bonferroni.								

Table 5. The results of the Multivariate Tests[a] (MANOVA) / F3(preferred leisure activities)

Effect	λ	F	Hypothesis df	Error df	Sig.	η^2_p	Observed Power
Specialty	0.783	1.254[b]	32.000	145.000	0.185	0.217	0.936
Physical activity	0.283	11.501[b]	32.000	145.000	0.000	0.717	1.000
Specialty* Physical activity	0.769	1.362[b]	32.000	145.000	0.113	0.231	0.958
a. Design: Specialty + Physical activity + Specialty*Physical activity							
b. Exact statistic							
λ-Wilk's lambda; F-Fisher test; df-degrees of freedom; Sig.-level of probability; η^2_p-partial eta squared							

Table 6. Univariate test results (ANOVA) and pairwise comparison of mean values for factor 3 (preferred leisure activities)

Dependent variable	Group	Mean	Std. Error	a-b	F(1,176)	Sig[b].	η^2_p	Observed Power
F3.1a Spending free time / family members	a. PES	3.508	0.094	-0.048	0.087	0.769	0.000	0.060
	b. PT	3.556	0.134					
F3.1b Spending free time entourage	a. PES	3.396	0.079	0.337*	6.002	0.015	0.033	0.683
	b. PT	3.058	0.113					
F3.1c Spending free time / life partner	a. PES	3.460	0.141	0.313	1.625	0.204	0.009	0.245
	b. PT	3.147	0.201					
F3.1d Spending free time / pet	a. PES	2.072	0.122	0.174	0.663	0.417	0.004	0.128

	b. PT	1.899	0.175					
F3.1e Spending free time / alone	a. PES	2.174	0.098	-0.106	0.390	0.533	0.002	0.095
	b. PT	2.281	0.139					
F3.2a Daily activities / going out with friends	a. PES	3.108	0.080	0.399*	8.126	0.005	0.044	0.809
	b. PT	2.709	0.115					
F3.2b Daily activities / reading	a. PES	2.216	0.087	-0.117	0.594	0.442	0.003	0.120
	b. PT	2.334	0.125					
F3.2c Daily activities / listening to music	a. PES	2.898	0.113	-0.045	0.052	0.820	0.000	0.056
	b. PT	2.943	0.161					
F3.2d Daily activities / cinema, theatre	a. PES	1.947	0.070	0.010	0.007	0.935	0.000	0.051
	b. PT	1.937	0.100					
F3.2e Daily activities / various sports activities	a. PES	3.460	0.054	0.176	3.542	0.061	0.020	0.465
	b. PT	3.284	0.077					
F3.2f Daily activities / walks in the park	a. PES	2.558	0.080	0.062	0.194	0.660	0.001	0.072
	b. PT	2.497	0.114					
F3.2g Daily activities / visits to relatives, friends	a. PES	2.341	0.079	0.255	3.394	0.067	0.019	0.449
	b. PT	2.086	0.113					
F3.2h Daily activities /socializing on the internet	a. PES	3.605	0.092	0.006	0.001	0.971	0.000	0.050
	b. PT	3.599	0.131					
F3.2i Daily activities / TV, computer games	a. PES	2.789	0.098	0.173	1.034	0.311	0.006	0.173
	b. PT	2.616	0.140					
F3.2j Daily activities / excursions, hiking	a. PES	1.617	0.059	0.087	0.724	0.396	0.004	0.135
	b. PT	1.530	0.084					
F3.2k Daily activities / shopping	a. PES	2.737	0.086	0.107	0.512	0.475	0.003	0.110
	b. PT	2.629	0.123					
F3.3a Weekend activities / going out with friends	a. PES	3.540	0.080	0.178	1.619	0.205	0.009	0.244
	b. PT	3.361	0.115					
F3.3b Weekend activities / reading	a. PES	2.138	0.088	-0.290	3.608	0.059	0.020	0.472
	b. PT	2.428	0.125					
F3.3c Weekend activities / listening to music	a. PES	2.923	0.115	-0.091	0.205	0.651	0.001	0.074
	b. PT	3.014	0.164					
F3.3d Weekend activities / cinema, theatre	a. PES	2.396	0.081	-0.095	0.459	0.499	0.003	0.103
	b. PT	2.491	0.115					
F3.3e Weekend activities / various sports activities	a. PES	3.321	0.067	0.322*	7.510	0.007	0.041	0.778
	b. PT	2.999	0.096					
F3.3f Weekend activities / walks in the park	a. PES	2.893	0.081	-0.030	0.046	0.830	0.000	0.055
	b. PT	2.923	0.115					
F3.3g Weekend activities / visits to relatives, friends	a. PES	2.736	0.094	0.062	0.142	0.706	0.001	0.066
	b. PT	2.674	0.135					
F3.3h Weekend activities / socializing on the internet	a. PES	3.616	0.094	-0.092	0.314	0.576	0.002	0.086
	b. PT	3.708	0.135					
F3.3i Weekend activities /TV, computer games	a. PES	2.927	0.093	0.104	0.407	0.524	0.002	0.097
	b. PT	2.824	0.133					
F3.3j Weekend activities / excursions, hiking	a. PES	2.438	0.078	-0.002	0.000	0.988	0.000	0.050
	b. PT	2.440	0.111					
F3.3k Weekend activities / shopping	a. PES	2.994	0.095	-0.265	2.544	0.112	0.014	0.355
	b. PT	3.259	0.136					
F3.4a Domestic holidays at sea	a. PES	3.198	0.111	-0.119	0.378	0.539	0.002	0.094
	b. PT	3.317	0.159					
F3.4b Domestic holidays in the mountains	a. PES	3.216	0.104	0.100	0.307	0.580	0.002	0.085
	b. PT	3.115	0.148					
F3.4c Holidays countryside / grandparents / relatives	a. PES	2.773	0.123	-0.058	0.074	0.785	0.000	0.058
	b. PT	2.831	0.175					
F3.4d Holidays abroad	a. PES	2.096	0.109	0.025	0.018	0.894	0.000	0.052

	b. PT	2.071	0.155					
F3.4e Spending holidays at home	a. PES	3.281	0.095	0.247	2.207	0.139	0.012	0.315
	b. PT	3.034	0.136					
F3.1a Spending free time / family members	a. HLPA	3.398	0.112	-0.268	2.676	0.104	0.015	0.370
	b. LLPA	3.666	0.120					
F3.1b Spending free time / schoolmates or entourage	a. HLPA	3.472	0.094	0.489*	12.628	0.000	0.067	0.942
	b. LLPA	2.982	0.101					
F3.1c Spending free time / life partner	a. HLPA	3.074	0.167	-0.460	3.511	0.063	0.020	0.462
	b. LLPA	3.534	0.180					
F3.1d Spending free time / pet	a. HLPA	2.079	0.145	0.188	0.780	0.378	0.004	0.142
	b. LLPA	1.891	0.156					
F3.1e Spending free time / alone	a. HLPA	2.350	0.116	0.245	2.082	0.151	0.012	0.300
	b. LLPA	2.105	0.125					
F3.2a Daily activities / going out with friends	a. HLPA	3.092	0.095	0.366*	6.839	0.010	0.037	0.739
	b. LLPA	2.725	0.102					
F3.2b Daily activities / reading	a. HLPA	2.214	0.104	-0.121	0.632	0.428	0.004	0.124
	b. LLPA	2.335	0.111					
F3.2c Daily activities / listening to music	a. HLPA	3.049	0.134	0.257	1.703	0.194	0.010	0.254
	b. LLPA	2.792	0.144					
F3.2d Daily activities / cinema, theatre	a. HLPA	2.100	0.083	0.316*	6.662	0.011	0.036	0.728
	b. LLPA	1.784	0.090					
F3.2e Daily activities / various sports activities	a. HLPA	4.215	0.064	1.687*	324.900	0.000	0.649	1.000
	b. LLPA	2.528	0.069					
F3.2f Daily activities / walks in the park	a. HLPA	2.526	0.095	-0.003	0.000	0.985	0.000	0.050
	b. LLPA	2.529	0.102					
F3.2g Daily activities / visits to relatives, friends	a. HLPA	2.163	0.094	-0.102	0.544	0.462	0.003	0.114
	b. LLPA	2.265	0.101					
F3.2h Daily activities /socializing on the internet	a. HLPA	3.572	0.109	-0.060	0.142	0.707	0.001	0.066
	b. LLPA	3.632	0.117					
F3.2i Daily activities / TV, computer games	a. HLPA	2.602	0.116	-0.202	1.404	0.238	0.008	0.218
	b. LLPA	2.804	0.125					
F3.2j Daily activities / excursions, hiking	a. HLPA	1.584	0.069	0.021	0.042	0.838	0.000	0.055
	b. LLPA	1.563	0.075					
F3.2k Daily activities / shopping	a. HLPA	2.630	0.102	-0.107	0.508	0.477	0.003	0.109
	b. LLPA	2.736	0.110					
F3.3a Weekend activities / going out with friends	a. HLPA	3.652	0.095	0.403*	8.300	0.004	0.045	0.817
	b. LLPA	3.249	0.103					
F3.3b Weekend activities / reading	a. HLPA	2.201	0.104	-0.164	1.149	0.285	0.006	0.187
	b. LLPA	2.365	0.112					
F3.3c Weekend activities / listening to music	a. HLPA	3.177	0.137	0.417*	4.310	0.039	0.024	0.542
	b. LLPA	2.760	0.147					
F3.3d Weekend activities / cinema, theatre	a. HLPA	2.527	0.096	0.167	1.406	0.237	0.008	0.218
	b. LLPA	2.360	0.103					
F3.3e Weekend activities / various sports activities	a. HLPA	3.803	0.080	1.285*	119.784	0.000	0.405	1.000
	b. LLPA	2.518	0.086					
F3.3f Weekend activities / walks in the park	a. HLPA	2.923	0.096	0.030	0.046	0.830	0.000	0.055
	b. LLPA	2.893	0.103					
F3.3g Weekend activities / visits to relatives, friends	a. HLPA	2.653	0.112	-0.103	0.391	0.533	0.002	0.095
	b. LLPA	2.756	0.120					
F3.3h Weekend activities / socializing on the internet	a. HLPA	3.605	0.112	-0.114	0.482	0.489	0.003	0.106
	b. LLPA	3.719	0.120					
F3.3i Weekend activities /TV, computer games	a. HLPA	2.841	0.111	-0.069	0.179	0.673	0.001	0.070
	b. LLPA	2.910	0.119					
	a. HLPA	2.509	0.093	0.141	1.072	0.302	0.006	0.178

F3.3j Weekend activities / excursions, hiking	b. LLPA	2.368	0.100					
F3.3k Weekend activities / shopping	a. HLPA	3.167	0.113	0.081	0.236	0.628	0.001	0.077
	b. LLPA	3.086	0.122					
F3.4a Domestic holidays at sea	a. HLPA	3.345	0.132	0.176	0.822	0.366	0.005	0.147
	b. LLPA	3.170	0.142					
F3.4b Domestic holidays in the mountains	a. HLPA	3.236	0.123	0.141	1.149	0.285	0.006	0.187
	b. LLPA	3.095	0.133					
F3.4c Holidays countryside / grandparents / relatives	a. HLPA	2.757	0.146	-0.090	0.175	0.676	0.001	0.070
	b. LLPA	2.846	0.157					
F3.4d Holidays abroad	a. HLPA	2.092	0.129	0.016	0.007	0.933	0.000	0.051
	b. LLPA	2.076	0.139					
F3.4e Spending holidays at home	a. HLPA	3.127	0.113	-0.063	0.143	0.706	0.001	0.066
	b. LLPA	3.189	0.122					
*. The mean difference is significant at the .05 level.								
b. Adjustment for multiple comparisons: Bonferroni.								

Table 7. The results of the Multivariate Tests[a] (MANOVA) / F4 (leisure sports activities)

Effect	**λ**	**F**	**Hypothesis df**	**Error df**	**Sig.**	**η^2_p**	**Observed Power**
Specialty	0.841	1.668[b]	18.000	159.000	0.050	0.159	0.930
Physical activity	0.257	25.488[b]	18.000	159.000	0.000	0.743	1.000
Specialty* Physical activity	0.888	1.112[b]	18.000	159.000	0.345	0.112	0.750
a. Design: Specialty + Physical activity + Specialty* Physical activity							
b. Exact statistic							
λ-Wilk's lambd; F-Fisher test; df-degrees of freedom; Sig.-level of probability; η^2_p-partial eta squared							

Table 8. Univariate test results (ANOVA) and pairwise comparison of mean values for factor 4 (leisure sports activities)

Dependent variable	**Group**	**Mean**	**Std. Error**	**a-b**	**F(1,176)**	**Sig[b].**	**η^2_p**	**Observed Power**
F4.1 Active lifestyle	a. PES	3.460	0.047	0.086	1.078	0.301	0.006	0.178
	b. PT	3.374	0.067					
F4.2 Involvement in sports activities	a. PES	3.490	0.049	0.169	3.871	0.051	0.022	0.499
	b. PT	3.320	0.070					
F4.3 The importance of sports activities	a. PES	3.711	0.052	0.226*	6.251	0.013	0.034	0.701
	b. PT	3.485	0.074					
F4.4 Satisfaction produced by physical effort	a. PES	3.901	0.057	0.180	3.308	0.071	0.018	0.440
	b. PT	3.721	0.081					
F4.5a Practice / Sports games	a. PES	3.225	0.094	0.524*	10.186	0.002	0.055	0.888
	b. PT	2.700	0.135					
F4.5b Practice / Jogging	a. PES	2.685	0.089	-0.122	0.629	0.429	0.004	0.124
	b. PT	2.807	0.126					
F4.5c Practice / fitness-bodybuilding	a. PES	2.674	0.102	0.128	0.521	0.471	0.003	0.111
	b. PT	2.546	0.145					
F4.5d Practice / Tennis or table tennis	a. PES	2.144	0.096	0.255	2.310	0.130	0.013	0.327
	b. PT	1.889	0.137					
F4.5e Practice / swimming	a. PES	1.839	0.087	-0.035	0.054	0.817	0.000	0.056
	b. PT	1.874	0.124					
F4.5f Practice / boxing, karate, wrestling	a. PES	1.499	0.093	0.212	1.710	0.193	0.010	0.255
	b. PT	1.286	0.133					

F4.5g Practice / cycling, rollerblading	a. PES	2.408	0.092	-0.254	2.533	0.113	0.014	0.353
	b. PT	2.662	0.131					
F4.6a Health effects / Sports games	a. PES	3.743	0.074	0.236	3.373	0.068	0.019	0.447
	b. PT	3.507	0.105					
F4.6b Health effects / Jogging	a. PES	3.499	0.078	-0.080	0.341	0.560	0.002	0.089
	b. PT	3.578	0.112					
F4.6c Health effects / fitness-bodybuilding	a. PES	3.756	0.082	0.044	0.093	0.760	0.001	0.061
	b. PT	3.713	0.117					
F4.6d Health effects / Tennis or table tennis	a. PES	2.652	0.066	0.197	2.939	0.088	0.016	0.400
	b. PT	2.455	0.094					
F4.6e Health effects / swimming	a. PES	4.091	0.074	0.033	0.066	0.798	0.000	0.057
	b. PT	4.058	0.105					
F4.6f Health effects / boxing, karate, wrestling	a. PES	2.954	0.097	0.207	1.509	0.221	0.009	0.231
	b. PT	2.747	0.138					
F4.6g Health effects / cycling, rollerblading	a. PES	2.934	0.080	0.149	1.145	0.286	0.006	0.186
	b. PT	2.785	0.114					
F4.1 Active lifestyle	a. HLPA	4.218	0.056	1.602*	377.881	0.000	0.682	1.000
	b. LLPA	2.616	0.060					
F4.2 Involvement in sports activities	a. HLPA	4.229	0.059	1.647*	366.217	0.000	0.675	1.000
	b. LLPA	2.581	0.063					
F4.3 The importance of sports activities	a. HLPA	4.415	0.061	1.634*	327.999	0.000	0.651	1.000
	b. LLPA	2.781	0.066					
F4.4 Satisfaction produced by physical effort	a. HLPA	4.285	0.067	0.949*	92.173	0.000	0.344	1.000
	b. LLPA	3.336	0.072					
F4.5a Practice / Sports games	a. HLPA	3.637	0.112	1.349*	67.373	0.000	0.277	1.000
	b. LLPA	2.288	0.120					
F4.5b Practice / Jogging	a. HLPA	3.141	0.105	0.790*	26.149	0.000	0.129	0.999
	b. LLPA	2.351	0.113					
F4.5c Practice / fitness-bodybuilding	a. HLPA	3.266	0.121	1.311*	54.677	0.000	0.237	1.000
	b. LLPA	1.955	0.130					
F4.5d Practice / Tennis or table tennis	a. HLPA	2.217	0.114	0.400*	5.676	0.018	0.031	0.659
	b. LLPA	1.817	0.123					
F4.5e Practice / swimming	a. HLPA	2.085	0.103	0.458*	9.113	0.003	0.049	0.851
	b. LLPA	1.628	0.111					
F4.5f Practice / boxing, karate, wrestling	a. HLPA	1.649	0.111	0.512*	9.982	0.002	0.054	0.881
	b. LLPA	1.136	0.119					
F4.5g Practice / cycling, rollerblading	a. HLPA	2.693	0.109	0.315*	3.896	0.050	0.022	0.501
	b. LLPA	2.378	0.117					
F4.6a Health effects / Sports games	a. HLPA	3.850	0.088	0.449*	12.174	0.001	0.065	0.934
	b. LLPA	3.401	0.094					
F4.6b Health effects / Jogging	a. HLPA	3.803	0.093	0.528*	26.149	0.000	0.129	0.999
	b. LLPA	3.274	0.100					
F4.6c Health effects / fitness-bodybuilding	a. HLPA	4.100	0.097	0.730*	26.239	0.000	0.130	0.999
	b. LLPA	3.369	0.104					
F4.6d Health effects / Tennis or table tennis	a. HLPA	2.490	0.078	-0.127	1.225	0.270	0.007	0.196
	b. LLPA	2.617	0.084					
F4.6e Health effects / swimming	a. HLPA	4.172	0.088	0.196	2.318	0.130	0.013	0.328
	b. LLPA	3.976	0.094					
F4.6f Health effects / boxing, karate, wrestling	a. HLPA	3.017	0.115	0.334*	3.910	0.050	0.022	0.503
	b. LLPA	2.683	0.124					
F4.6g Health effects / cycling, rollerblading	a. HLPA	2.857	0.095	-0.005	0.001	0.970	0.000	0.050
	b. LLPA	2.862	0.102					
*. The mean difference is significant at the .05 level.								
b. Adjustment for multiple comparisons: Bonferroni.								

Declaration of conflict of interests-

There is no conflict of interest for the author regarding this paper. All authors have equally contributed to this article as senior authors.

Informed consent

The tested group received the information related to the study and its objectives, the research being carried out with the consent of all investigated subjects, respecting the rules of personal data protection.

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