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EXAMINING GENERATIONAL DIFFERENCES IN INTRINSIC AND EXTRINSIC MOTIVATION FOR PHYSICAL ACTIVITY

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ABSTRACT

In today's world, where people are increasingly exposed to high levels of stress and demanding living and working conditions, finding the right motivation for exercise and engaging in physical activity (PA) presents a significant challenge for the modern individual. Contemporary working conditions, especially following the development of information technologies, have led to changes that different generations experience and adapt to in various ways. One way to overcome the challenges of the modern era is to find motivation for PA, whether driven by internal satisfaction or external factors. The research, which examined generational and gender differences in exercise motivation, included 204 participants from the Republic of Serbia, and the Exercise Motivations Inventory – EMI-2 was used to assess their motives. To test the differences, a two-way analysis of variance (ANOVA) and post hoc analysis were applied. Based on the results, it was concluded that there is no significant interaction effect between generation and gender on intrinsic motivators. On the other hand, the study revealed a statistically significant moderate effect of generation on extrinsic motivators, with

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differences observed only between Generation X and Generation Z. In this way, the research provides a valuable contribution to the understanding of motivation for physical activity in a national context and serves as a foundation for further studies in this field.

Key words: exercise motivators, EMI-2 scale, generations X, Y, and Z, testing differences

ISPITIVANJE GENERACIJSKIH RAZLIKA U UNUTRAŠNJOJ I SPOLJAŠNJOJ MOTIVACIJI ZA FIZIČKU AKTIVNOST

APSTRAKT

Motivacija predstavlja ključni pokretač ljudskog ponašanja, a razumevanje razloga zbog kojih se pojedinci odlučuju da se bave fizičkom aktivnošću (FA) od posebnog je značaja u savremenom društvu koje je izloženo brojnim stresorima i ubrzanom načinu života. Savremeni radni uslovi, naročito nakon razvoja informacionih tehnologija, doveli su do promena koje različite generacije doživljavaju i prevazilaze na različite načine, što se odražava i na njihove motive za uključivanje u fizičku aktivnost. Cilj ovog istraživanja bio je da se ispita postojanje generacijskih i polnih razlika u unutrašnjoj i spoljašnjoj motivaciji za bavljenje fizičkom aktivnošću. U istraživanju je učestvovalo 204 ispitanika sa teritorije Republike Srbije, a za procenu motiva korišćena je skala Exercise Motivations Inventory – *EMI-2*. Za testiranje razlika korišćena je dvofaktorska analiza varijanse (ANOVA) i post hoc analiza, a na osnovu dobijenih rezultata se zaključilo da nema značajne razlike u uticaju pripadnosti određenoj generaciji na unutrašnje motivatore muškaraca, odnosno žena. Sa druge strane, istraživanje je pokazalo da je prisutan značajan umeren uticaj generacije na spoljašnje motivatore, a da je razlika prisutna jedino između generacija X i Z. Na ovaj način, istraživanje pruža značajan doprinos razumevanju motivacije za fizičku aktivnost u nacionalnom kontekstu, kao i osnovu za dalja istraživanja u ovoj oblasti.

Ključne reči: motivatori za vežbanje, EMI-2 skala, X, Y i Z generacija, testiranje razlika

Introduction

In contemporary society, physical activity (PA) is recognized as a key determinant of both physical and mental health. PA encompasses any bodily movement produced by the contraction of skeletal muscles that results in energy expenditure, including structured exercise, sports participation, and recreational play (World Health Organization [WHO], 2022). The WHO (2022) highlights the multifaceted benefits of regular physical activity, including stress reduction, the prevention of chronic diseases, decreased risk of premature mortality, maintenance of a healthy body weight, improvement in mental health, and enhancement of overall quality of life. Additionally, PA has been associated with improved cognitive functioning, enhanced psychological well-being, and a reduced incidence of falls in older populations (Gallardo-Gómez et al., 2022; Warburton, Nicol, & Bredin, 2006).

Despite the well-established health benefits, individuals' engagement in PA is influenced by a wide range of psychological, social, and cultural factors. Understanding the underlying motives for PA participation is essential for the development of age-appropriate and contextually relevant interventions aimed at fostering lifelong physical activity habits. Among these factors, motivation plays a pivotal role in initiating and maintaining physical activity, particularly when analyzed through the lens of generational identity. Generational differences in motivational patterns are shaped by the socio-economic, technological, and cultural environments experienced during formative years. Motivation significantly influences exercise behavior and adherence, making it a critical focus of inquiry in the design of effective public health strategies (Molanorouzi, Khoo, & Morris, 2015; Egli et al., 2011; Ingledew & Markland, 2008; Vallerand, 2007).

Generational differences extend beyond chronological age and encompass variations in values, attitudes, behaviors, and lifestyle preferences. These generational characteristics influence how physical activity is perceived and prioritized, shaping distinct motivational profiles. Generations are commonly defined not only by birth years but also by shared life experiences and collective identities (Howe &

Strauss, 2009). The principal generational cohorts relevant to this study include Baby Boomers (born 1946–1964), Generation X (1965–1980), Generation Y or Millennials (1981–1996), and Generation Z (1997–2010) (Jošanov-Vrgović & Mitrić-Aćimović, 2025).

Baby Boomers, raised in a predominantly analog era, often associate physical activity with health preservation and disease prevention. In contrast, younger cohorts, socialized in an era of pervasive digital technologies, tend to perceive PA as a form of identity expression, psychological regulation, or social engagement. Motivational drivers can be categorized as intrinsic – driven by internal rewards such as personal growth, enjoyment, and competence – or extrinsic, encompassing external rewards like social recognition, appearance enhancement, and social pressures (Jošanov-Vrgović & Mitrić-Aćimović, 2025). Baby Boomers are generally described as disciplined, committed, and loyal, with a strong orientation toward work and activity. Their engagement in physical activity is frequently motivated by a desire to maintain health, prevent illness, sustain functional independence, foster social connection, and alleviate stress (Molanorouzi, Khoo, & Morris, 2015).

Generation X and Generation Y, by contrast, are more family-oriented and place greater emphasis on achieving work-life balance. Generation X is marked by independence, pragmatism, and adaptability, and its members value autonomy, tangible outcomes, and new experiences. Their motivation for PA often reflects a desire to maintain health amid time constraints, with a preference for flexible, goal-oriented programs that align with their lifestyles. This cohort also demonstrates higher program loyalty when interventions resonate with their values and practical needs.

Millennials (Generation Y) were the first to grow up with digital technologies and are characterized by high levels of technological competence, ambition, and self-awareness regarding both mental and physical health. Their motivation for engaging in PA is typically a combination of aesthetic, psychological, and health-related reasons. Millennials favor integrative fitness formats that connect body, mind, and community, and are often drawn to programs that are visually engaging, meaningful, and customizable. Due to their digital literacy and access to online health information, they are frequently labeled the most health-conscious generation (Suprapto et al., 2019).

Generation Z, the first fully digital-native generation, has been exposed to constant internet connectivity, social media, and mobile technology

from early childhood. Their PA motivations are predominantly intrinsic, centered on enjoyment, self-expression, emotional regulation, and the desire to feel psychologically empowered. They tend to favor personalized, engaging, and fast-paced fitness experiences that are responsive to their emotional and mental well-being.

Motivation in the context of PA is a dynamic and multifactorial construct shaped by internal dispositions and external circumstances. Within the domain of sport and exercise science, motivation is frequently examined through the Self-Determination Theory (SDT), developed by Deci and Ryan (1985), which distinguishes motivational types based on the degree of autonomy and internalization. According to SDT, motivation exists on a continuum from amotivation to extrinsic and intrinsic motivation. Intrinsically motivated individuals engage in PA due to interest, enjoyment, and personal challenge, thus satisfying basic psychological needs such as autonomy, competence, and relatedness (Azid et al., 2023; Deci & Vansteenkiste, 2004). These individuals tend to demonstrate sustained engagement, high discipline, and elevated performance.

Conversely, extrinsic motivation is characterized by participation in PA driven by external incentives, such as rewards, approval, or societal expectations. Although this type of motivation can initiate PA behaviors, it is generally associated with lower levels of long-term adherence and perceived autonomy (Ryan & Deci, 2000; Deci & Vansteenkiste, 2004). Physical activity motivated by intrinsic factors is more likely to be maintained over time, as individuals derive personal meaning and satisfaction from the behavior. Thus, promoting intrinsic motivation is essential for fostering sustainable PA habits (Vallerand, 2007).

Empirical research has consistently demonstrated that motivation for PA is influenced by age, gender, and generational identity. Older adults are predominantly motivated by health-related outcomes and the desire to maintain independence, whereas younger individuals often pursue PA for intrinsic reasons such as enjoyment, social connection, and psychological well-being (Molanorouzi, Khoo, & Morris, 2015; Kilpatrick, Hebert, & Bartholomew, 2005). Studies have shown that members of Generations Y and Z are largely intrinsically motivated, while appearance-related motives—classified as extrinsic—are particularly salient among Generation Z (Brunet & Sabiston, 2011; Egli et al., 2011; Trujillo et al., 2004). Individuals driven by intrinsic motives demonstrate greater long-term engagement in PA compared to those motivated by extrinsic incentives (Teixeira et al., 2012).

Gender also plays a significant role in shaping motivational factors. Men are more frequently motivated by internal drivers such as strength development, competition, and mastery, whereas women are often more influenced by extrinsic factors, including weight management and physical appearance (Molanorouzi, Khoo, & Morris, 2015; Chowdhury, 2012; Gallagher et al., 2012). Some studies indicate that extrinsic motivators are instrumental during the initial phase of PA engagement, while intrinsic motivators are more critical for sustaining long-term adherence (Walker, 2008). Authentic intrinsic motivation, characterized by genuine interest and enjoyment, has been strongly correlated with consistent participation in PA over time (Liu, Menhas, & Saqib, 2024; Ednie & Stibor, 2017; Markland & Tobin, 2010).

Despite the growing international body of literature on this topic, there remains a paucity of research within the Serbian context specifically addressing generational and gender differences in PA motivation. Given the need for culturally relevant and demographically tailored health promotion strategies, a deeper understanding of these motivational dynamics is warranted. Accordingly, the present study seeks to fill this research gap by examining motivational differences across Generations X, Y, and Z in Serbia, with particular attention to both intrinsic and extrinsic motivational orientations and gender-based distinctions.

The primary aim of this study is to identify and analyze variations in intrinsic and extrinsic motivational factors for physical activity among respondents in the Republic of Serbia. This analysis encompasses generational differences among members of Generations X, Y, and Z, as well as gender-based motivational patterns. By advancing the understanding of these differences, the study aims to inform the design of targeted interventions and public health programs that effectively promote physical activity across diverse population segments. For this purpose, two research questions were defined:

RQ1: How do generational affiliation (age) and gender affect internal motivators for exercise? Does gender alter the influence of generational affiliation on internal motivators?

RQ2: How do generational affiliation (age) and gender affect external motivators for exercise? Does gender alter the influence of generational affiliation on external motivators?

Based on the application of the Exercise Motivations Inventory – 2 (EMI-2) scale, four research hypotheses were formulated:

H1: There is a significant difference in internal motivators for exercise between individuals of different genders.
H2: There is a significant difference in external motivators for exercise between individuals of different genders.
H3: Differences in internal motivators for exercise are evident among members of different generations (X, Y, and Z).
H4: Differences in external motivators for exercise are evident among members of different generations (X, Y, and Z).

For the purpose of hypothesis testing, the Exercise Motivations Inventory-2 (EMI-2) scale was translated into Serbian and disseminated electronically via accessible digital platforms. Given the study's objective to explore differences in intrinsic and extrinsic motivators for physical activity, the researchers employed a purposive sampling strategy, distributing the questionnaire through social media channels and email communications directed at fitness centers and gyms. This approach was deemed appropriate due to the increasing prevalence of structured exercise across all age groups.
The sample is therefore considered purposive, as the research specifically targeted individuals who already engage in physical activity or are likely to do so, ensuring the relevance of responses to the study objectives. Data collection was conducted over a three-month period, from December 2024 to February 2025, using a Google Forms-based survey accessible to all interested participants.
The primary aim of this methodological approach was to generate insights into how generational affiliation shapes exercise motivation. The findings are intended to inform the development of customized physical activity programs that are better aligned with the values, preferences, and psychological needs of distinct age cohorts. This knowledge has practical implications not only for professionals in sports science and public health, but also for policymakers and advocates of healthy lifestyle promotion.

Method

This study utilized the Exercise Motivations Inventory – EMI-2 (Markland & Ingledew, 1997), an enhanced version of the original EMI questionnaire (Markland & Hardy, 1993). The inventory assesses various motives for engaging in physical activity and is applicable to

individuals of both genders. The construction of the EMI questionnaire is based on the Self-Determination Theory (SDT) (Deci & Ryan, 1985, 1990, 2008), which facilitates the understanding of motivation and behavior in the context of exercise. According to SDT, motives for exercise are categorized as intrinsic and extrinsic. Intrinsic motives encompass enjoyment of the activity, a sense of competence, personal challenges, skill development, and social connectedness. Extrinsic motives include goals such as improving physical appearance, controlling body weight, and achieving social recognition, reflecting engagement in the activity for instrumental reasons.

The theorists (Ryan & Deci, 2017; Deci & Ryan, 1985) emphasize that these two types of motivation have distinct cognitive, emotional, and behavioral consequences. Intrinsic motivation fosters a sense of freedom and autonomy, whereas extrinsic motivation can induce tension, feelings of pressure, and external control. Self-Determination Theory (SDT) highlights the importance of the content of motivation as a key factor in determining behavior and outcomes related to individual well-being. Today, this theory is regarded as a leading framework for understanding human motivation and the processes that shape the initiation, maintenance, and effects of various forms of motivation.

The EMI-2 inventory comprises 51 items distributed across 14 scales: stress management, revitalization, enjoyment, challenge, social recognition, affiliation, competition, health pressures, disease avoidance, positive health, weight management, physical appearance, strength and endurance, and mobility. Examples of intrinsic motives include challenge, affiliation, revitalization, and enjoyment, while extrinsic motives encompass appearance enhancement, weight control, health pressures, disease avoidance, and competition. Some motives, such as social recognition and stress management, may fall into both categories.

In order to test the proposed hypotheses, a study was conducted between December 2024 and February 2025, involving 204 participants selected using an intentional sampling method. Data were collected through an online survey via Google Forms, which enabled the inclusion of respondents from different regions of the Republic of Serbia. Participation in the research was voluntary and anonymous, creating an atmosphere of trust and encouraging honesty in responses.

The reliability of the EMI-2 scale for the collected data was measured using Cronbach's alpha coefficient for each subscale individually. The

overall Cronbach's alpha coefficient value is 0.928, while the individual values for each of the 14 subscales are presented in Table 1.

Table 1 Cronbach's Alpha Coefficients for Exercise Motivators

Motivators	Cronbach's Alpha
Total Stress Management	0.918
Total Revitalization	0.919
Total Enjoyment	0.922
Total Challenge	0.918
Total Social Recognition	0.926
Total Affiliation	0.924
Total Competition	0.924
Total Health Pressures	0.930
Total Ill-Health Avoidance	0.924
Total Positive Health	0.921
Total Weight Management	0.928
Total Appearance	0.921
Total Strength & Endurance	0.918
Total Nimbleness	0.922

Source: Authors' calculation

The results indicate that the scale's reliability is satisfactory, considering that coefficient values greater than 0.7 are deemed acceptable (Loewenthal & Lewis, 2020).

To test differences in internal and external motivators for exercise among individuals of different genders and generations, a two-way analysis of variance (ANOVA) was used, along with a post hoc analysis to identify differences between specific categories that showed statistical significance in the initial analysis. The testing procedure and the entire analysis were conducted using IBM SPSS Statistics 25 software.

Results and Discussion

In addition to the main section comprising 51 items distributed across 14 subscales in accordance with the parameters of the Exercise Motivations Inventory-2 (EMI-2), the questionnaire included a series of demographic questions. The analysis of the collected data indicated that the sample consisted predominantly of female respondents (55.88%), followed by male participants (43.63%), while a small proportion of respondents (0.49%) opted not to disclose their gender.

The generational breakdown among female participants was as follows: 28.9% identified as members of Generation X, 38.6% as Generation Y, and 32.5% as Generation Z. Among male participants, 31.5% belonged to Generation X, 43.8% to Generation Y, and 24.7% to Generation Z. The respondent who did not report their gender was classified under Generation Y.

The questionnaire also included four general items designed to assess participants' engagement in physical activity and their self-perceived physical fitness. Self-assessment of fitness was measured using a six-point Likert scale ranging from 0 (“not at all true for me”) to 5 (“very true for me”).

Gender Gender-Based Analysis of Physical Activity Engagement

Gender-based analysis revealed that a slightly higher proportion of male respondents (83.1%) reported engaging in regular physical activity compared to females (76.3%).

Within the female cohort, the most frequently reported exercise duration was less than one year (11.4%), while 10.5% reported engaging in physical activity for either 5 to 10 years or 10 to 15 years, respectively. Notably, 26.3% of female respondents did not answer the question regarding exercise duration, which is consistent with the 23.7% who reported not engaging in physical activity.

Among male respondents, the highest proportion reported exercising for 5 to 10 years (13.5%), followed by those exercising for less than one year (10.1%) and those exercising for 4 to 5 years (9%). Similar to the female cohort, 22.5% of male participants did not respond to the question about exercise duration, aligning with the 16.9% who indicated they were not physically active.

In terms of frequency, the majority of female respondents (36%) reported exercising three times per week, followed by 17.5% who reported exercising twice per week. Similarly, 34.8% of male participants exercised three times weekly, while 20.2% exercised four times per week.

Regarding self-rated physical fitness, the most common rating among both female (40.4%) and male (39.3%) respondents was 3 on the Likert scale. The next most frequent rating was 4, reported by 27.2% of women and 28.1% of men. Overall, the gender distribution of physical activity behaviors and fitness self-perceptions was relatively balanced.

Differences in Physical Activity Engagement

Generational analysis revealed comparable levels of engagement in physical activity across the three cohorts: 80.3% of Generation X, 77.4% of Generation Y, and 79.7% of Generation Z participants reported engaging in exercise.

When examining exercise duration, the highest proportion of Generation X respondents (13.1%) reported being physically active for 5 to 10 years. Among Generation Y participants, equal proportions (11.9%) reported exercising for 5 to 10 years and 25 to 30 years, while 10.7% reported exercising for less than one year. In Generation Z, the largest proportion (13.6%) indicated exercising for up to one year, followed by 11.9% reporting durations of 2 to 3 years, 4 to 5 years, and 10 to 15 years, respectively.

In terms of weekly exercise frequency, the dominant pattern across all generations was exercising three times per week: 41% of Generation X, 34.5% of Generation Y, and 30.5% of Generation Z participants reported this frequency.

Self-assessment of physical fitness followed a similar trend across cohorts, with the most frequent rating being 3: Generation X (42.6%), Generation Y (39.3%), and Generation Z (37.3%). The second most common rating in all three generations was 4: Generation X (32.8%), Generation Y (23.8%), and Generation Z (27.1%).

Examining Gender and Generational Differences in Intrinsic Motivators for Physical Activity

To examine the influence of gender and generational affiliation on intrinsic exercise motivation, two categorical independent variables

were defined—gender (male/female) and generation (X/Y/Z)—along with one continuous dependent variable, Total Intrinsic Motivation Score.

This analytical framework enabled the investigation of the following:

1. Differences in intrinsic motivation between male and female respondents;
2. Differences in intrinsic motivation among members of Generations X, Y, and Z;
3. Interaction effects between gender and generational affiliation – specifically, whether the influence of generational identity on intrinsic motivation differs between men and women.

This multi-variable approach allows for a nuanced understanding of motivational patterns and their implications for designing gender- and age-specific physical activity interventions.

Table 2 Descriptive Statistics for Dependent Variable: Total Intrinsic Motivators

Gender	Generation	Mean	Std. Deviation	N
Female	X	3.2787	.85209	32
	Y	3.3762	.90139	44
	Z	3.3224	.72813	37
	Total	3.3310	.82760	113
Male	X	3.0291	.99001	28
	Y	3.2456	.82638	39
	Z	3.3975	.72501	22
	Total	3.2150	.86069	89
No response	Y	2.3333	.	1
	Total	2.3333	.	1
Total	X	3.1622	.91966	60
	Y	3.3032	.86562	84
	Z	3.3504	.72162	59
	Total	3.2752	.84273	203

Source: Authors' calculation

The results of the descriptive statistics (Table 2) showed that women from Generations X and Y were more driven by intrinsic motivators to engage in exercise compared to their male peers. The only exception was among the youngest male participants, members of Generation Z,

who reported being more intrinsically motivated than their female counterparts. Based on Figure 1, differences in the level of intrinsic motivators between men and women across generations can also be observed. The most pronounced difference appears among Generation X males and females, while the smallest difference is seen within Generation Z.

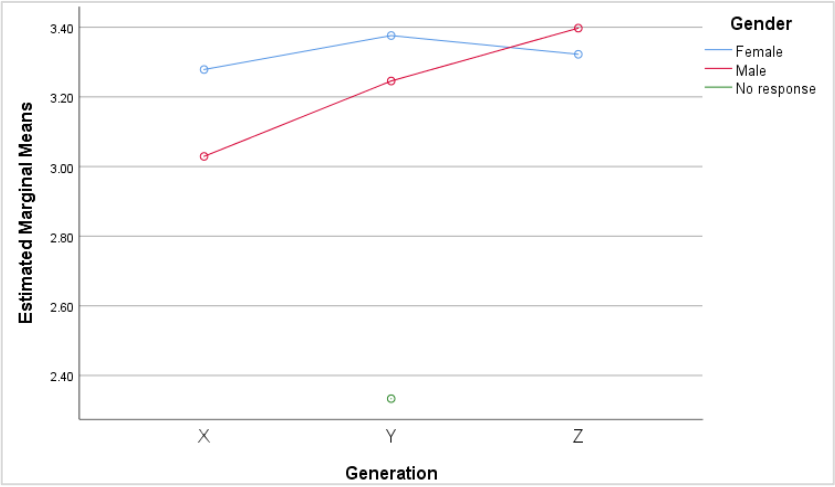

Figure 1 Estimated Marginal Means of Total Intrinsic Motivators

The application of the two-way analysis of variance was preceded by the examination of the homogeneity of variances. Since the assumption of homogeneity was not violated (*Sig*. = 0.542 > 0.05), this indicates that the variance of the dependent variable *Total Intrinsic Motivators* is equal across all groups. Therefore, the precondition for further analysis was met.

Based on the results presented in Table 3, conclusions can be drawn regarding the presence of an interaction effect, specifically whether the influence of generation on the level of intrinsic motivation varies depending on whether the individual is male or female.

Table 3 Tests of Between-Subjects Effects for Total Intrinsic Motivators

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	3.478[a]	6	.580	.812	.562	.024
Intercept	163.881	1	163.881	229.462	.000	.539
Gender	1.444	2	.722	1.011	.366	.010
Generation	1.380	2	.690	.966	.382	.010

Gender * Generation	.772	2	.386	.541	.583	.005
Error	139.983	196	.714			
Total	2321.062	203				
Corrected Total	143.461	202				
a. R Squared = .024 (Adjusted R Squared = -.006)						

Source: Authors' calculation

The analysis of the interaction between the two independent variables, *Gender * Generation*, shows that the interaction effect is not significant, as *Sig*. = 0.583 > 0.05. This indicates that there is no significant difference in the influence of generational affiliation on intrinsic motivators between men and women.

Based on Table 3, the separate effects are also interpreted, given that the interaction effect of the independent variables was found to be non-significant. Since *Sig*. = 0.366 > 0.05 for the independent variable *Gender*, there is no significant effect of gender on intrinsic motivators. Likewise, since *Sig*. = 0.382 > 0.05 for the independent variable *Generation*, we conclude that there is no significant effect of generational affiliation on intrinsic motivators. This means that men and women do not differ in terms of intrinsic motivators, nor do members of different generations.

Therefore, we can conclude that Hypotheses H1 and H3 are not supported.

Examining Gender and Generational Differences in Extrinsic Motivators for Physical Activity

In order to examine the influence of generational affiliation and gender on extrinsic motivators for exercising, two categorical independent variables were defined: gender (M/F) and generation (X/Y/Z), along with one continuous dependent variable, *Total Extrinsic Motivators*.

This allowed for the investigation of:

1. gender differences in the level of extrinsic motivators;
2. differences in extrinsic motivators among generations X, Y, and Z; and
3. the interaction between the two independent variables – whether age/generational affiliation has a different effect on extrinsic motivators for men and women.

The descriptive statistics results presented in Table 4 showed that women from all generations expressed greater interest in physical activity from the perspective of extrinsic motivators.

Table 4 Descriptive Statistics for Dependent Variable: Total Extrinsic Motivators

Gender	Generation	Mean	Std. Deviation	N
Female	X	3.1807	.67573	32
	Y	3.3837	.74843	44
	Z	3.5903	.62336	37
	Total	3.3939	.70150	113
Male	X	2.9822	.87453	28
	Y	3.3048	.71477	39
	Z	3.4644	.56212	22
	Total	3.2427	.75251	89
No response	Y	3.9167	.	1
	Total	3.9167	.	1
Total	X	3.0881	.77452	60
	Y	3.3534	.72768	84
	Z	3.5434	.59946	59
	Total	3.3302	.72587	203

Source: Authors' calculation

These statements are also confirmed by the graphical representation (Figure 2), from which it can be observed that there are noticeable differences in the level of extrinsic motivators between men and women, favoring female respondents. The most pronounced difference is seen between men and women of Generation X, while the smallest difference is observed between men and women of Generation Y.

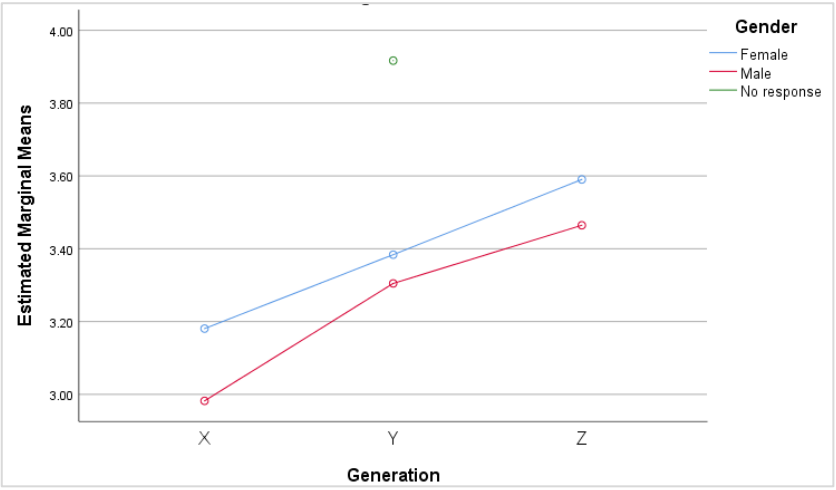

Figure 2 Estimated Marginal Means of Total Extrinsic Motivators

The application of Levene's Test of Equality of Error showed that the homogeneity of variances was not violated, as *Sig*. = 0.339 > 0.05, meaning that the variance of the dependent variable — *Total Extrinsic Motivators* — is equal across all groups, allowing for further analysis, specifically the use of two-way analysis of variance (ANOVA).

Based on the results presented in Table 5, a conclusion is drawn regarding the presence of an interaction effect; that is, whether the influence of generation on the level of extrinsic motivation changes depending on whether the individual is male or female.

Table 5 Tests of Between-Subjects Effects for Total Extrinsic Motivators

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7.502[a]	6	1.250	2.477	.025	.070
Intercept	209.622	1	209.622	415.308	.000	.679
Gender	1.187	2	.593	1.176	.311	.012
Generation	5.818	2	2.909	5.764	.004	.056
Gender * Generation	.124	2	.062	.123	.884	.001
Error	98.929	196	.505			
Total	2357.752	203				
Corrected Total	106.431	202				

a. R Squared = .070 (Adjusted R Squared = .042)

Source: Authors' calculation

By examining the interaction of the two independent variables *Gender* * *Generation*, it can be concluded that the interaction effect is not significant since *Sig*. = 0.884 > 0.05, indicating that there is no significant difference in the influence of belonging to a certain generation on the extrinsic motivators for men and women.

Based on Table 5, the separate effects can also be interpreted, given that the interaction effect of the independent variables was found to be not significant. Since *Sig*. = 0.311 > 0.05 for the independent variable *Gender*, it is concluded that there is no significant effect of gender. However, since *Sig*. = 0.004 < 0.05 for the independent variable *Generation*, it is concluded that there is a statistically significant effect of generation on extrinsic motivators. Given that *Eta Squared* = 0.056, according to Cohen's criteria, this effect can be classified as moderate.

This means that men and women do not differ in terms of extrinsic motivators, while there is a difference among members of different generations. Therefore, we can conclude that hypothesis H2 is rejected, while hypothesis H4 is accepted.

Since the strength of a test is influenced, among other factors, by the magnitude of the difference between the observed groups, in addition to calculating the *Eta Squared* coefficient, which measures effect size, Cohen's *d* coefficient was also calculated.

The study found that the generational influence on external motivators was moderate, which was confirmed by the calculation of Cohen's *d* coefficient, with a value of 0.66. Considering that the reference range for a moderate effect is between 0.4 and 0.6 (Wilcox, 2022), this result supports the conclusion.

Given that a statistically significant effect of the variable *Generation* on extrinsic motivators has been established, it is justified to conduct a post hoc analysis in order to determine between which generations the statistically significant differences exist (Table 6).

Table 6 Post Hoc Tests for Multiple Generation Comparisons

(I) Generation	(J) Generation	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
X	Y	-.2654	.12009	.072	-.5490	.0182
	Z	-.4553*	.13026	.002	-.7630	-.1477
Y	X	.2654	.12009	.072	-.0182	.5490
	Z	-.1900	.12068	.259	-.4750	.0950
Z	X	.4553*	.13026	.002	.1477	.7630

	Y	.1900	.12068	.259	-.0950	.4750
Based on observed means. The error term is Mean Square(Error) = .505.						
*. The mean difference is significant at the .05 level.						

Source: Authors' calculation

Further analysis shows that since the *Sig*. level is 0.02 < 0.05, it can be concluded that there is a statistically significant difference between Generation X and Generation Z. This means that the mean score of Generation X for extrinsic motivators (Mean = 3.0881, SD = 0.77452) differs significantly from the mean score of Generation Z (Mean = 3.5434, SD = 0.59946). Generation Y (Mean = 3.3534, SD = 0.72768) does not differ significantly from either of the other two generations.

The analysis of gender and generational differences in intrinsic and extrinsic motivation revealed a statistically significant difference only between Generations X and Z in relation to extrinsic motivators. All other results indicated that neither the individual nor the combined effects of the independent variables, *Gender* and *Generation*, were statistically significant.

Discussion

The research findings indicate an absence of statistically significant differences in intrinsic motivation for physical activity across different generations and genders. This result contrasts with the findings of numerous previous studies, which have reported pronounced differences in motivational patterns based on age and gender (Molanorouzi et al., 2015; Egli et al., 2011; Brunet & Sabiston, 2011; Kilpatrick et al., 2005). This discrepancy may be explained by a range of interrelated methodological, contextual, and psychological factors.

The cultural context in which the study was conducted may have influenced the results. Most prior research has been carried out in Western countries characterized by well-developed infrastructure for physical activity and specific socio-economic conditions. In contrast, the present study was conducted in the Republic of Serbia, where socio-economic challenges, transitional processes, and limited resources may contribute to a homogenization of motivational patterns across generations. Additionally, sample characteristics and data collection methods represent important factors. Since the sample consisted of participants who voluntarily completed the questionnaire online, there is a possibility that the study primarily attracted individuals who were

already, to some extent, interested in physical activity. Such sample bias may reduce variability in motivation that might otherwise be observable in a more representative sample. Despite using the validated Exercise Motivations Inventory-2 (EMI-2), variations in its administration, translation, or participants' interpretation may have affected the validity of measuring motivational dimensions. These factors could complicate the comparison of the current findings with those of previous studies.

Beyond the previously discussed methodological and contextual factors, various psychological mechanisms may also account for the lack of generational differences in intrinsic motivation observed in this study. Self-Determination Theory (Deci & Ryan, 2008; Ryan & Deci, 2000, 2017) posits the existence of multiple forms of extrinsic motivation that can be highly internalized, such as identified or integrated regulation. Although formally classified as extrinsic, these forms of motivation are subjectively experienced as autonomous. This internalization may contribute to the homogenization of responses and reduce observable generational differences in motivation. Global events such as the COVID-19 pandemic or economic crises may affect individuals across generations similarly by introducing universal stressors and reshaping life priorities. Under such circumstances, physical activity increasingly serves as a means of protecting mental health and maintaining personal stability, regardless of age, thereby contributing to the convergence of motivational patterns (Gallardo-Gómez et al., 2022). Furthermore, among individuals with long-term exercise experience, physical activity may become automatized, relying more on habit than on consciously experienced motives (Markland & Tobin, 2010). This behavioral automatization can lead to reduced introspective accuracy and to similar response patterns across generational groups. A high level of psychological flexibility, the ability to adapt to change and cope with challenges may also foster the development of intrinsic motivation as a dominant coping strategy in everyday life (Azid et al., 2023). If individuals from different generations develop similar strategies for emotional self-regulation through physical activity, their motivational profiles may likewise converge. Moreover, psychological literature highlights the tendency of individuals to reinterpret their behavioral motives in accordance with socially acceptable norms (Coon & Mitterer, 2010). As a result, motives that are initially external (e.g., appearance, social prestige) may be internally perceived as intrinsic (e.g., personal

satisfaction or a sense of competence), complicating the accurate differentiation between types of motivation in self-reported data.
Considering all the aforementioned factors, it can be concluded that the results of this study should not be viewed as an isolated case of inconsistency, but rather as a reflection of the specific context and the inherent complexity of human motivation. Future research should incorporate qualitative methods to gain a deeper understanding of the nuances within motivational structures across different generations.

Conclusion

The research on differences in internal and external exercise motivators among members of different generations (X, Y, and Z) and genders, conducted between December 2024 and February 2025 on a randomly selected sample from the territory of the Republic of Serbia, showed that certain differences exist, but they are not sufficiently pronounced across all the defined categories.
The results of the descriptive statistics showed that women from generations X and Y are more motivated by internal factors for engaging in physical activity compared to their male peers. These results are not consistent with previous research findings (Molanorouzi et al., 2015; Chowdhury, 2012; Gallagher et al., 2012; Egli et al., 2011). Only the youngest male participants, members of Generation Z, demonstrated a higher level of internal motivation compared to females from the same generation. At the same time, the research showed that women of all generations are more motivated to exercise by external motivators.
The application of a two-way analysis of variance showed that there is no significant interaction effect of generation and gender on internal motivators, as the interaction effect was not statistically significant. The examination of the independent effects of gender and generation also showed no statistically significant influence on internal motivators. These findings are not aligned with the results of previous studies (Molanorouzi, Khoo, & Morris, 2015; Brunet & Sabiston, 2011; Egli et al., 2011; Kilpatrick, Hebert, & Bartholomew, 2005; Trujillo et al., 2004).
A detailed analysis was also conducted regarding the impact of generation and gender on external motivators for exercise. The interaction analysis of the two independent variables – gender and generation (*Gender* * *Generation*) – showed that the interaction effect was not statistically significant. This suggests that the influence of generational affiliation on external motivation does not vary by gender,

meaning that men and women across different generations are similarly affected by external motivational factors.

Furthermore, since the significance level for the variable *Gender* was *Sig*. = 0.311 > 0.05, it can be concluded that gender alone does not have a statistically significant effect on external motivators. On the other hand, the value of *Sig*. = 0.004 < 0.05 for the variable *Generation* indicates the existence of a statistically significant individual effect of generational affiliation.

The value of the *Eta Squared* coefficient, according to Cohen's criterion, indicated a moderate effect size. Therefore, external motivation appears to influence both men and women in comparable ways; however, significant variations emerge across generations, with the most pronounced differences found between Generation X and Generation Z.

Based on the obtained results from the research conducted in the Republic of Serbia, it can be concluded that women from generations X and Z are more internally motivated to engage in physical activity than men from the same generations.

As for the limitations of the study, a larger sample size would provide better insights into the differences between individuals of different genders and generations in their motivation for physical activity.

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