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EFFECTS OF RECREATIONAL TENNIS PRACTICES ON BODY COMPOSITION, FREE TIME MANAGEMENT AND MOTIVATIONAL PERSISTENCE

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Abstract

This study was conducted to examine the body composition, free time management and motivational persistence of individuals participating in recreational tennis. The sample of the study consisted of administrative staff working at Manisa Celal Bayar University, who voluntarily

participated in the study and had never received tennis training before. In the study, pre-test-post-test control group experimental design, one of the quantitative research designs, was used. The experimental study was carried out by forming a study group with a total of 24 personnel (equal number of men and women), 12 of whom were in the control group and 12 in the experimental group. As measurement tools, body composition (data such as body weight, body fat ratios, lean muscle mass and body mass index) were taken with Tanita MC 780 MA brand device. The free time management scale and motivational persistence scale were used as measurement tools. Due to the small number of participants, Mann-Whitney U test, one of the nonparametric tests, was used to observe the differences between the control and experimental groups, and Wilcoxon sequential test was used to analyse the in-group pre-test and post-test data. The relationship between the scales was tested with the 'Spearman's Correlations' test. Regarding body composition, it was determined that recreational tennis practices contributed positively to the general health status of the participants. Comparisons between pre- and post-test measurements revealed that the participants showed a significant improvement in using their free time more efficiently as a result of recreational tennis activities. In terms of motivational persistence, it was observed that tennis practices strengthened the participants' determination to achieve their goals. The results of the study show that recreational tennis practices are an important tool that enables individuals to focus on long-term goals and to be resilient against the difficulties they face.

Keywords

Recreation, Body Composition, Free Time Management, Motivational Persistence

1. Introduction

Recreational tennis has become increasingly popular among people of all age groups. A tennis program with a more informal structure and emphasis on sociability, fun, and well-being has shown potential to attract and retain those who make healthy lifestyles a priority. Furthermore, amateur sports federations may also be able to recruit participants who have little time available for physical activities in local parks in their communities. Although there is evidence of the health benefits of tennis training in schoolchildren, the effects of recreational tennis have not been demonstrated for people who do not engage in formal sports competitions (Chao et al., 2021). The present study may help bridge this gap by examining some effects of intensive tennis practice using the approach noted above.

The study's design, which utilizes a pre-test-post-test control group experimental framework, allows for a robust evaluation of the immediate and longer-term effects of recreational tennis on participants' physical and psychological profiles. This aligns with findings from Naderi et al., who reported that regular recreational participants in similar sports exhibited lower fat mass compared to sedentary individuals, indicating that tennis can effectively reduce body fat and improve overall health (Naderi et al., 2018).

In addition to physical health benefits, the study also explores how recreational tennis affects free time management and motivational persistence. Engaging in structured leisure activities like tennis has been associated with improved time management skills and increased motivation to pursue personal goals. Research by Werneck et al. highlights that leisure-time physical activity can significantly reduce psychological distress and enhance overall well-being, suggesting that recreational tennis may serve as a valuable tool for fostering resilience and goal-oriented behavior among participants (Werneck et al., 2021). Furthermore, Denovan and Macaskill emphasize the importance of leisure activities in promoting mental health and coping strategies, particularly in high-stress environments like universities (Denovan & Macaskill, 2016).

The findings from this study have the potential to extend the current body of knowledge on recreational tennis and contribute to our understanding of how structured leisure activities can promote healthier lifestyles in adult populations. Focusing on university administrative staff, this study provides insight into the broader benefits of active leisure activities, particularly for individuals new to sports. The implications of this study are significant, as they suggest that recreational tennis can be an effective intervention for improving both physical health and psychological well-being in adults, thereby encouraging more individuals to engage in such activities. The proposed research is relevant because it is not only related to sociodemographic features, but it may also reflect the physical and psychological condition of practitioners, besides being able to identify the conditions of the type of body management.

In conclusion, the study underscores the multifaceted benefits of recreational tennis, demonstrating its potential to enhance body composition, improve time management, and foster motivational persistence among participants. These findings highlight the importance of promoting recreational tennis as a viable option for individuals seeking to improve their health and well-being, particularly among those who may be new to the sport.

1.1 Body Composition

The body is composed of bone, muscle, fat and extracellular fluids, and body composition emerges with the combination of these four components in certain proportions (Borga et al., 2018). In individuals and societies, body composition and growth are key indicators of health. In particular, obesity emphasizes the importance of body fat for health in both adults and children. Moreover, considering the impact of different components of body composition on health, body composition measurement is becoming increasingly important (Wells et al., (2006). Factors such as age, gender, muscle structure, physical characteristics, health status and eating habits are important factors affecting body health (Borga et al., 2018).

Measurement of body composition provides important information to follow nutrition-related studies and to evaluate the effectiveness of strategies. In cases where nutrient needs and intake are incompatible, changes in body composition may occur (Kuriyan, 2018). Increased body fat can cause undesirable conditions to occur in the muscles and negatively affect muscle mobility. In an ideal body, a balanced ratio between fatty and lean tissues is expected (Borga et al., 2018). Body composition plays a vital role in increasing self-confidence and maintaining mental and physical health. Individuals make their own assessments depending on how close or far they are from the standards accepted by society. Those who feel close to the ideal measurements usually feel high self-confidence and have a positive outlook. On the other hand, individuals who think that they cannot reach ideal measurements may lack self-confidence and have a negative self-perception. In this context, it is possible to think that body composition has important effects on quality of life.

Finally, the psychological dimension of body composition should not be ignored. Individuals' body perceptions and self-esteem are directly affected by changes in their body composition. Achieving a healthy body composition can help individuals feel better about themselves and take a more active role in their social lives. Therefore, the effects of body composition on both physical and mental health are among the important factors that improve the quality of life of individuals.

1.2 Free Time Management

After responding to one's family, social and professional responsibilities, free time management can be defined as the identification and planning of preferred work or activities for the purpose of having fun, rest, learning and development activities beyond professional activities, increasing social relations or participating in society. The time allocated to leisure activities should

not lead to worthless pursuits and should not be used in negative ways. This requires careful and measured management of time that has the potential to provide benefits. Free time activities not only enhance the physical, mental and cognitive development of the individual, but can also make various social contributions. Therefore, the management of this time should be carefully planned from a broader perspective (Sivan & Ruskin, 2000).

Free time management is an important indicator of how individuals utilise their free time. This process can directly affect individuals' quality of life and general happiness levels. Free time is an opportunity that individuals can use to reduce their stress, renew themselves and contribute to their personal development. However, the effective utilisation of this time depends on how individuals manage this time. An effective free time management strategy can make individuals' lives more meaningful and fulfilling by enabling them to fill their free time with both fun and useful activities. This process can create an ideal ground for individuals to develop their hobbies, strengthen their social relationships and learn new skills. Moreover, free time management can help individuals to establish a healthy balance between their work and private lives. This balance can increase the overall quality of life of individuals by making them more productive and happy in both their work and private lives (Kılıç & Karaküçük, 2017).

1.3 Motivational Persistence

Motivational persistence is seen as an important factor at the beginning of the learning process and is necessary for this process to begin (Broussard & Garrison, 2004). In other words, motivational persistence is a special type of motivation that an individual feels to be successful in the field of activity or to achieve the desired results (Pintrich, 2003). In this context, while motivational persistence is recognised as a fundamental factor supporting learning and success, it also functions as a force that enables the individual to achieve his/her goals and to be resilient in the face of difficulties. Motivational persistence plays an important role in achieving both short-term and long-term goals, carrying out learning processes effectively and increasing the final success of the individual. Therefore, understanding and supporting individuals' motivational persistence levels can contribute to both their academic and personal development. As a result, motivational persistence can be considered as a critical psychological element that supports individuals' success and general well-being.

2. Method

2.1 Research Model

In this study, experimental design with pre-test-post-test control group, one of the quantitative research designs, was used. Experimental design is a research field in which the data desired to be observed are produced to discover cause-effect relationships between variables under the control of the researcher. There is an experimental group and a control group in the research. The control and experimental groups were determined by convenience sampling method. The pre-test and post-test measurements of free time management, motivational persistence and body composition, which are dependent variables, were applied to both groups. The independent variable of the study, recreational tennis practices, was applied only to the experimental group. The control group was not included in any application. During the 8-week (2-month) implementation phase, tennis training was provided for 1 hour 3 days a week.

2.2 Population and sample (study group)

The sample (study group) of this research consists of administrative staff working at Manisa Celal Bayar University Şehzadeler Campus and who volunteered to participate in the study. The administrative personnel in the research group were determined using convenience sampling method. The research was conducted simultaneously with the determined experimental group and the same number of control group. The quota of the sample group was determined as 12 participants. In case the participants could not participate in the applications due to leaving the project or other reasons (health, quitting the job, etc.), participants from the reserve quota were included in the project. This approach is important to ensure the continuity of the research and the uninterrupted continuation of the data collection process. The creation of a reserve quota supports the preservation of the sample size of the research and the applicability of the planned methodology.

2.3 Data Collection

Within the scope of this research, quantitative data were collected on the free time management, motivational persistence and body composition measurements of administrative staff regarding recreational tennis practices. Data were collected with scale forms for pre-assessment (pre-test) before the applications, and the same scale forms were used for post-assessment (post-test) in order to see the effects of the activities on the participants after the application.

2.3.1 Personal Information Form

In the study, a personal information form was created to determine the participants' gender, age, the unit they work in, weekly free time duration, average frequency of participation in free time activities in a month, active / passive participation in sportive, social and cultural / artistic activities and with whom recreational activities are carried out, to what extent they participate in the activities organised on the campus, for what purpose they participate in sportive activities, and to what extent they find the facilities on the campus sufficient.

2.3.2 Free Time Management Scale

The scale was developed by Wei-Ching Wang, Chin-Hsung Kao, Tzung-Cheng Huan Chung-Chi Wu in 2011. The 'Goal Setting and Evaluation' dimension of the original scale examines the clarity of the goals that individuals set when planning their free time and the way they evaluate the process of achieving these goals. The 'Leisure Attitude' dimension analyses how individuals perceive and evaluate their free time. The 'Method' dimension focuses on the way individuals manage and use their free time, while the 'Programming' dimension evaluates how effectively individuals plan their time. The scale consists of 4 sub-dimensions and 15 items in total. The response codes for each item range from 1.00 to 5.00. The rating items consist of '1-Strongly Disagree, 2-Disagree, 3-Undecided, 4-Agree, 5-Strongly Agree' options. The items in the 'programming' sub-dimension of the scale consist of negative statements.

2.3.3 Motivational Persistence Scale

The original form of the scale developed by Constantin, Holman, and Hojbotă (2011) consists of 13 items and 3 sub-dimensions. The fit index values of the scale (x2= 150.47, sd= 62, CFI = .94, GFI = .94, AGFI = .91, RMSEA = .056) were found and the factor loadings of the items ranged between .57 and .83. Cronbach's alpha internal consistency reliability coefficients were .79 for the scale as a whole, .72 for the long-term goal pursuit subscale, .75 for the current goal pursuit subscale, and .76 for the repeating unattainable goals subscale. Corrected item-total correlations ranged between .27 and .50. The response codes for each item were graded between 1.00 and 5.00. The rating items are expressed as '1 - Strongly Disagree, 5 - Strongly Agree'.

The Motivational Persistence Scale is an important tool for measuring individuals' motivation levels and their commitment to goals. The scale comprehensively addresses various dimensions of motivational persistence and assesses individuals' determination to achieve their long-term goals, their ability to pursue current goals, and their attitudes towards unattainable goals.

The three subscales of the scale emphasize different aspects of motivational persistence. The ability to pursue long-term goals measures an individual's capacity to commit to goals for a long period of time and to make the necessary effort to achieve these goals. The ability to pursue current goals assesses the individual's focus on and actions towards short-term and current goals. The dimension of reiterating unattainable goals measures the individual's ability to revise and retry goals when faced with failures and obstacles.

2.3.4 Body Composition Measurement

Participants' weight, fat percentage, fat weight (kg), body mass index (BMI), and total muscle percentage were measured with Tanita MC 780 MA brand body composition meter with 0.1 kg accuracy. The analyses of the participants were taken between 09:00 and 10:00 in the morning.

The handpieces of the device allow a more detailed analysis of the body composition and thus a more comprehensive assessment can be made. This 10-15 second analysis process provides detailed information about the body composition of the participants.

2.4 Data Analysis

After all data had been collected, they were categorized, and any missing or incorrectly entered data were excluded from the study prior to conducting the analysis. Excluding such data is a critical step in preserving the validity and reliability of the research findings. At this stage, particular care was taken to ensure that conditions necessary for collecting and analyzing the data in accordance with the research objectives were established.

Following the categorization process, descriptive statistics were employed to evaluate the characteristics of the collected data and their alignment with the research questions. These statistics elucidate fundamental properties of the dataset such as central tendency, distribution, and variability. Frequency analysis reveals how often particular categories or responses occur within the dataset. This analysis is integral to answering the research questions, as it highlights prominent trends and patterns in specific responses or categories. Moreover, these statistical representations play a pivotal role in interpreting the study’s findings and deriving overall conclusions.

Frequency and descriptive statistics were utilized for the statistical representation of the obtained data. Reliability analyses were performed for each scale. In testing the normality of the research data, skewness and kurtosis values were taken into consideration. Given the small sample size, the Mann-Whitney U test, a nonparametric method, was employed to observe differences

between the control and experimental groups, while the Wilcoxon signed-rank test was used to analyze pretest and posttest scores within groups. The relationships among the scales were examined using Spearman's correlation. In this study, a p-value of less than 0.05 was considered significant.

3. Findings

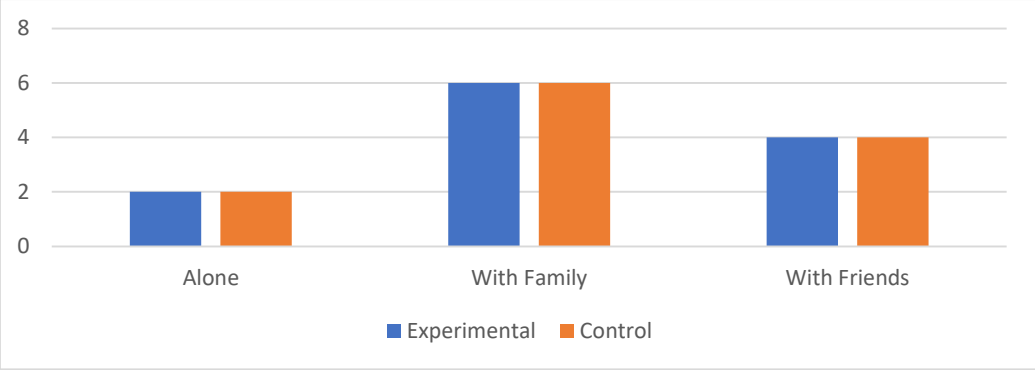
In this section, the descriptive distributions of the experimental and control group students participating in the study are presented, along with the results of the Mann Whitney-U and Spearman's Correlations tests conducted to demonstrate the effectiveness of regularly performed recreational tennis interventions. The significance level for the study was set at $p < .05$.

Table 1. *Distribution of participants according to gender characteristics*

Experimental Group		Total	**Control Group**		Total
Female	Male		Female	Male	
6	6	12	6	6	12

This table shows that experimental and control groups were distributed in a balanced manner in terms of gender. This is an important factor in scientific studies, as gender can have an impact on the results. Maintaining this balance helps to make the results of the experiment more reliable and universally applicable.

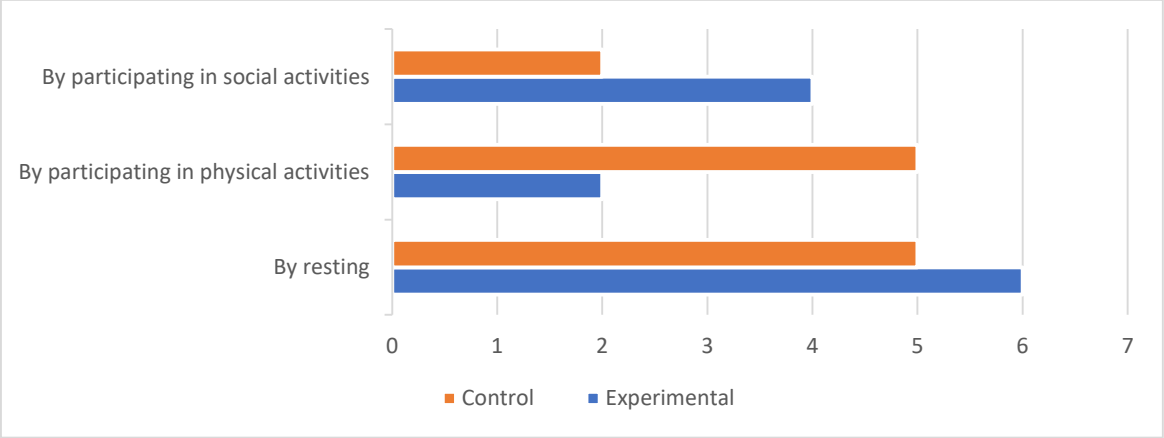
Graph 1. *Participation Patterns in Leisure Activities of The Experimental and Control Groups*



Graph 1. presents a bar chart comparing the ways in which the experimental and control groups participate in leisure activities. The chart features three distinct categories: "Alone," "With

Family," and "With Friends." The blue bars represent the experimental group, while the red bars represent the control group. In both groups, participants' preferences for engaging in leisure activities are evenly distributed among these categories. Based on these data, it can be inferred that both groups tend to participate in leisure activities with their families, and that this category shows the highest level of participation overall.

Graph 2. *How The Experimental and Control Groups Spent Their Free Time*



Graph 2. presents a bar chart illustrating how the experimental and control groups allocate their free time. The chart includes three types of activities: "resting," "participating in physical activities," and "participating in social activities." As shown in the chart, the experimental group exhibits the highest inclination toward resting, followed by participation in physical activities. In both groups, participation in social activities is lower compared to the other two activities. Overall, this figure provides a comparative assessment of how the experimental and control groups prefer to spend their free time.

Table 2. *Pre-test and Post-test Average Scores of Scales*

Scales		**N**	$\overline{X}$	**Sd**	**Min.**	**Max.**
Free Time Management Scale (FMS)	Pre-test	24	3,36	,484	2,33	4,27
	Post-test	24	3,82	,381	3,00	4,47
Motivational Persistence Scale (MPS)	Pre-test	24	3,38	,574	1,85	4,31
	Post-test	24	3,89	,516	2,46	5,00

Table 2 presents the pre-test and post-test mean scores for two different scales (FMS and MPS). For both scales, each test included 24 participants (from the experimental and control groups). The pre-test mean score for the Free Time Management scale was reported as 3.36, whereas the post-test mean score was 3.82, indicating higher post-test scores compared to the pre-test. Similarly, the pre-test mean score for the Motivational Persistence Scale was 3.38, while the post-test mean score was 3.89, also suggesting an increase in the post-test scores relative to the pre-test. For both scales, the mean, minimum, and maximum post-test values were higher than those observed in the pre-test. Notably, there was a decrease in standard deviation values, indicating reduced variance in the post-test scores and thereby reflecting greater consistency in participants' responses.

Table 3. *Mann-Whitney U Test Results of FMS and MPS Post-Test Average Scores According to Experimental and Control Groups*

Scales	Groups	N	Average Rank	Total Rank	U	p
Free Time Management Scale (FMS)	Experimental	12	15,92	191,00	31,00	**0,017***
	Control	12	9,08	109,00		
Motivational Persistence Scale (MPS)	Experimental	12	16,92	203,00	19,00	**0,002***
	Control	12	8,08	97,00		

The Mann-Whitney U test results for the Free Time Management Scale and the Motivational Persistence Scale scores obtained by participants and non-participants in the recreational tennis program at the post-test are presented in Table 3. According to these findings, at the end of the 8-week experimental study, there was a significant difference in both free time management and motivational persistence between individuals who took part in the recreational tennis program and those who did not ($U=31.00$; $U=19.00$, $p<.05$). Based on the mean rank values, it appears that those who participated in the recreational tennis activities demonstrated higher levels of free time management and motivational persistence compared to non-participants.

Table 4. *Mann-Whitney U Test Results of FMS and MPS Post-Test Average Scores According to the Gender of the Participants*

Scales	Gender	N	Average Rank	Total Rank	U	p
	Female	12	12,25	147,00	69,00	,862

Free Time Management Scale (FMS)	Male	12	12,75	153,00		
Motivational Persistence Scale (MPS)	Female	12	12,58	151,00	71,00	,954
	Male	12	12,42	149,00		

In Table 4., the Mann-Whitney U test results for the post-test mean scores of the Free Time Management Scale (FMS) and the Motivational Persistence Scale (MPS) according to gender are presented. The rank means and totals for both FMS and MPS exhibit similarity across genders. This similarity is further supported by the U and p values derived from the Mann-Whitney U test. Since p>.05 for both scales, no statistically significant difference was observed between genders in terms of free time management or motivational persistence. These findings suggest that, within this sample, recreational tennis interventions did not produce a significant difference when comparing genders.

Table 5. *Spearman's Correlation Test Results for the Relationship Between Participants' Free Time Management and Motivational Persistence Levels*

Scales		**1.**	**2.**
1. Motivational Persistence	C.C.	1	,326
	p		,120
	n	24	24
2. Free Time Management	C.C.	,326	1
	p	,120	
	n	24	24

According to the Spearman's correlation test results presented in Table 5., there is no statistically significant relationship between participants' free time management and motivational persistence levels ($\rho = .326$, $p > .05$). Although the correlation coefficient of .326 indicates a low positive relationship, the p-value (.120) demonstrates that this relationship is not statistically significant. These findings suggest that free time management skills and motivational persistence are not related in this sample. The low correlation between the two variables implies that they may develop independently and be influenced by different psychological or environmental factors.

Table 6. *Participants' Body Composition Values Within and Between Groups*

Experimental Groups	**Control Groups**	**Between Groups**

		$\overline{X}$ and Sd	Z	p		$\overline{X}$ and Sd	Z	p	p
Weight (kg)	Pre Test	77.5±12.08	-3.059	**0.002***	Pre Test	66.52±13.91	-2.810	**0.005***	0,07
	Post Test	75.12±12.26			Post Test	67.16±13.99			0,19
Fat percentage (%)	Pre Test	26.94±7.80	-2.937	**0.003***	Pre Test	23.33±8.25	-2.403	**0.016***	0,09
	Post Test	25.24±7.72			Post Test	24.85±8.24			0,11
Muscle percentage (%)	Pre Test	69.49±7.46	-1.492	0.136	Pre Test	57.14±11.42	-1.182	0.237	**0,008**
	Post Test	70.00±7.62			Post Test	57.35±11.43			**0,008**
Body Mass Index	Pre Test	26.26±4.11	-3.061	**0.002***	Pre Test	26.88±2.96	-2.842	**0.004***	0,187
	Post Test	25.02±4.55			Post Test	27.15±3.09			0,198

When body composition values were examined following the eight-week training program, the experimental group showed a statistically significant decrease in weight, body fat percentage, and BMI, while no statistically significant difference was observed in muscle mass ratio. In the control group, there was a statistically significant increase in weight and body fat percentage, whereas no significant changes were observed in muscle mass ratio or BMI. Intergroup analyses revealed no statistically significant differences between groups in pre- and post-test values for weight, body fat percentage, or BMI. However, a statistically significant difference was identified in muscle mass ratio values for both the pre-test and post-test comparisons between the groups.

4. Discussion

The findings of the study underscore the multifaceted benefits of recreational tennis, particularly in relation to body composition, time management, and motivational persistence. The results indicate that participation in recreational tennis contributes positively to individuals' overall health, time management skills, and motivation levels. These findings align with previous research emphasizing the benefits of structured physical activity on both physical and psychological well-being (Jayanthi & Esser, 2013; Pluim et al., 2017). These physiological improvements contribute

to overall health and well-being, reinforcing the notion that structured physical activities like tennis are beneficial for maintaining a healthy body composition.

4.1 Body Composition Improvements

The study demonstrated a statistically significant reduction in weight, body fat percentage, and BMI in the experimental group following the 8-week tennis training program. These findings are consistent with existing literature that highlights the positive effects of recreational sports on body composition (Ngatman et al., 2023). Unlike the control group, which showed an increase in weight and fat percentage over time, the experimental group experienced significant improvements in these metrics, supporting the argument that recreational tennis can be an effective strategy for weight management and fat reduction. However, muscle mass changes were not statistically significant, suggesting that while tennis contributes to fat loss, it may not be as effective as resistance training for muscle gain. Future studies may benefit from incorporating additional strength training components to further examine changes in lean muscle mass. Previous studies have similarly indicated that while tennis can enhance cardiovascular fitness and aid in fat loss, it may not provide the same stimulus for muscle hypertrophy as structured strength training programs (Kong & Li, 2023; Knee et al., 2024). Therefore, it is recommended that future research incorporate additional strength training components alongside tennis training to further investigate their combined effects on lean muscle mass development.

4.2 Free Time Management Enhancement

The study's findings indicate a significant improvement in free time management skills among participants in the experimental group engaged in recreational tennis. This enhancement suggests that structured leisure activities, such as tennis, can facilitate better planning and utilization of free time, leading to more productive lifestyles. Previous research supports this assertion, demonstrating that engagement in organized recreational activities positively influences individuals' time management skills and overall productivity (Wang, 2018; Gezgin et al., 2021). For instance, Wang (2018) emphasizes that structured free-time management courses can help individuals, particularly students, develop constructive leisure habits that mitigate issues like internet addiction, thus promoting a more effective use of free time.

Moreover, the relationship between free time management and overall life satisfaction has been well-documented. Studies have shown that effective management of free time is crucial for enhancing quality of life, as it positively impacts participation in activities, satisfaction levels, and health outcomes (Terzi et al., 2024; Arı & Erdoğan, 2022). For example, Terzi et al. (2024) highlight that effective management of free time enhances the quality of life by positively impacting participation, satisfaction, and health outcomes. This aligns with the findings of the current study, reinforcing the importance of integrating sports activities into daily routines to cultivate better time management practices.

Furthermore, the positive effects of recreational activities on free time management extend beyond mere scheduling; they also foster social interactions and community engagement. Engaging in sports like tennis not only provides physical benefits but also encourages social connections, which are essential for maintaining motivation and commitment to time management (Kundakcı et al., 2024; Hassan, 2024). As participants learn to balance their leisure activities with other responsibilities, they develop skills that enhance their overall productivity and life satisfaction.

4.3 Motivational Persistence and Psychological Well-Being

The findings of the study indicate that individuals participating in recreational tennis demonstrated significantly higher levels of motivational persistence compared to those in the control group. This enhancement in motivational persistence aligns with existing literature that emphasizes the role of structured physical activities in fostering focus and commitment to long-term goals. For instance, Pintrich (2003) discusses the importance of motivation in academic settings, highlighting how goal-oriented behavior is essential for achieving success in various domains, including sports and education. Similarly, Broussard and Garrison (2004) emphasize that motivation is a critical factor influencing academic performance and persistence, suggesting that the principles of motivation in educational contexts can be extrapolated to physical activities.

Moreover, the psychological benefits of recreational sports extend beyond motivation to include improvements in self-esteem, stress management, and overall mental well-being. Research has shown that regular participation in physical activities can lead to reductions in anxiety and depressive symptoms, contributing to a more resilient psychological state (Beşikçi et al., 2021; Clark et al., 2021). This resilience is particularly important in navigating challenges both

within and outside of sports, as it equips individuals with the skills necessary to cope with setbacks and maintain focus on their goals (Kim et al., 2019).

These findings reinforce the importance of integrating recreational sports into individuals' lives not only for their physical benefits but also for their potential to enhance psychological resilience and goal-oriented behavior.

4.4 Gender Differences and Correlation Analysis

The analysis revealed no statistically significant differences in free time management or motivational persistence between male and female participants. This suggests that the benefits of recreational tennis apply equally across genders, reinforcing the idea that structured physical activities can have universal positive effects. Additionally, while a low positive correlation was found between free time management and motivational persistence, it was not statistically significant. This finding suggests that while both constructs may develop through recreational sports, they might be influenced by different psychological or environmental factors.

However, it is essential to acknowledge the potential methodological limitations that may have influenced these results. Factors such as sample size, participant demographics, and the specific measures employed to assess free time management and motivational persistence could have impacted the findings. For instance, a small sample size may limit the statistical power to detect meaningful differences or relationships, while the characteristics of the participant group (e.g., age, skill level, socio-economic status) may also play a role in shaping the outcomes (Pluim et al., 2017; Jõesaar & Hein, 2011). Future research should aim to address these limitations by employing larger, more diverse samples and utilizing robust measurement tools to enhance the validity of the findings.

4.5 Limitations and Future Research Directions

Despite the positive findings, this study has several limitations. The sample size was relatively small, which may limit the generalizability of the results. Future research with a larger and more diverse sample could provide more robust conclusions. Additionally, while the study examined the short-term effects of recreational tennis over an 8-week period, long-term studies are needed to determine whether these benefits persist over time. Another limitation is the reliance on self-reported measures for free time management and motivational persistence, which may

introduce response biases. Future studies could incorporate qualitative methodologies, such as interviews or focus groups, to gain deeper insights into participants' experiences.

5. Conclusion

In conclusion, this study underscores the multifaceted benefits of recreational tennis, demonstrating its potential to improve body composition, enhance free time management, and foster motivational persistence. The findings support the promotion of recreational tennis as a valuable intervention for individuals seeking to improve their physical health and psychological well-being. Encouraging participation in structured leisure activities such as tennis can serve as an effective strategy for fostering healthier lifestyles and greater personal development. Future research should continue to explore the long-term effects of recreational sports on both physical and psychological outcomes to better understand their role in overall well-being.

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