

Optimism and Pessimism Levels of Sports Sciences Students by Various Variables

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ABSTRACT

Introduction: The present study was designed to investigate the optimism and pessimism levels of sports sciences faculty students in relation to a range of demographic and sport-specific variables.

Method: A descriptive and relational survey design was employed. A total of 361 students (Female: n=160, 44.3%; Male: n=201, 55.7%) enrolled at Yalova University Faculty of Sports Sciences during the 2024-2025 academic year were recruited on a voluntary basis. Data were collected using the Athletes' Optimism and Pessimism Scale (AOPS), developed by Tekkursun Demir (2022). Independent samples t-tests, one-way ANOVA, and simple linear regression analyses were conducted; effect sizes were reported as Cohen's d and eta-squared (η^2).

Results: Pessimism scores were found to differ significantly by gender, with female students obtaining higher scores than their male counterparts ($t=2.322$; $p=0.021$; $d=0.248$). Injury experience was associated with significantly lower optimism ($t=2.145$; $p=0.032$; $d=0.265$) and higher pessimism ($t=-3.280$; $p=0.001$; $d=0.551$). An inverted-U relationship was identified between weekly training frequency and optimism; students training 3-4 days per week scored significantly higher than other groups ($F=5.487$; $p=0.005$; $\eta^2=0.030$). No significant differences were observed for department, grade level, sport license, sport type, training years, achievement, income, or future anxiety.

Conclusion: Age was not identified as a significant predictor. Optimism and pessimism mutually predicted each other at a low but statistically significant level ($\beta \approx 0.143$; $R^2=0.021$; $p=0.006$). Injury experience and training frequency are identified as key biopsychosocial variables shaping the psychological profiles of sports sciences students.

Keywords: Optimism, Pessimism, Sports Sciences Students.

ÖZET

Spor Bilimleri Öğrencilerinin İyimserlik ve Karamsarlık Düzeylerinin Çeşitli Değişkenler Açısından İncelenmesi

Amaç: Bu araştırmanın amacı, Spor Bilimleri Fakültesi öğrencilerinin iyimserlik ve karamsarlık düzeylerini çeşitli demografik ve sportif değişkenler açısından incelemektir.

Yöntem: Betimsel ve ilişkisel tarama modeliyle yürütülen çalışmaya 361 öğrenci (Kadın: n=160, %44,3; Erkek: n=201, %55,7) gönüllü olarak katılmıştır. Veri toplama aracı olarak Tekkursun Demir (2022) tarafından geliştirilen SİVKÖ kullanılmıştır. Bağımsız t-testi, tek yönlü ANOVA ve regresyon analizleri uygulanmıştır.

Bulgular: Cinsiyet karamsarlık boyutunda anlamlı farklılık yaratmış; kadın öğrenciler erkeklere kıyasla daha yüksek karamsarlık puanı almıştır ($t=2,322$; $p=0,021$; $d=0,248$). Sakatlık deneyimi iyimserlik ($d=0,265$) ve karamsarlık ($d=0,551$) düzeyleriyle anlamlı düzeyde ilişkili bulunmuştur. Haftada 3-4 gün antrenman yapanların iyimserlik puanları en yüksek bulunmuştur ($F=5,487$; $p=0,005$; $\eta^2=0,030$). Diğer değişkenlerde anlamlı fark saptanmamıştır.

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Sonuç: Yaşın anlamlı bir yordayıcı olmadığı; iyimserlik ile karamsarlığın birbirini anlamlı düzeyde yordadığı görülmüştür ($R^2=0,021$; $p=0,006$). Sakatlık ve antrenman sıklığı, psikolojik profili şekillendiren temel biyopsikososyal değişkenler olarak belirlenmiştir.

Anahtar Kelimeler: İyimserlik, Karamsarlık, Spor Bilimleri Öğrencileri.

INTRODUCTION

Sport is a complex phenomenon in which physical and mental processes interact dynamically. In the contemporary sports sciences literature, athletic performance is widely acknowledged to be shaped not only by biomechanical data, training loads, or physiological capacity, but also by cognitive processes, future expectations, and emotional dispositions (Hussain, Ahmad and Fatima, 2023). Among the most fundamental components of these mental processes are optimism and pessimism (Arindi, 2025). Optimism is conceptualized as a stable and generalized expectation that positive outcomes will prevail in the future (Carver and Scheier, 2014), while pessimism reflects a tendency to focus on negative aspects of events and a belief that future outcomes are likely to be unfavorable (Kemper, Beierlein, Kovaleva and Rammstedt, 2012). Both constructs have been identified as core psychological variables influencing athletes' training adherence, stress management during competition, and overall mental well-being.

When confronted with stressful situations, pessimistic athletes tend to gravitate toward avoidance-based coping strategies rather than task-focused ones (Nicholls et al., 2008). High levels of pessimism have been empirically linked to mental fatigue, performance anxiety, and increased tendencies toward physical aggression (Yucekaya et al., 2025). These cognitive structures become particularly consequential for university-level athletes who simultaneously face academic achievement pressures and the demands of transitioning toward professional careers (Ghyaidh, 2025). Converging evidence indicates that optimism enhances athletic performance, while pessimism operates as a barrier to the full realization of potential (Ortin-Montero, Martinez-Rodriguez, Reche-Garcia, Garces de los Fayos-Ruiz and Gonzalez-Hernandez, 2018). Optimism has also been associated with accelerated post-injury recovery and reduced burnout risk (Angosto et al., 2021; Ortin-Montero et al., 2018).

University students enrolled in sports sciences programs occupy a dual role: they simultaneously build academic careers and actively participate in sport at professional or amateur levels. Examining the optimism and pessimism profiles of this group carries strategic significance for understanding the psychological dispositions and professional readiness of future coaches, sports administrators, and physical education teachers (Bozdog and Demirbilek, 2025). It should be noted that optimism and pessimism are conceptually distinct constructs from

psychological resilience; while they may share theoretical relationships, they are measured by different instruments and should not be used interchangeably. In a 15-year longitudinal investigation, Karhu et al. (2025) found dispositional optimism positively associated with physical activity levels and general fitness in adulthood. Conversely, elevated pessimism has been linked to increased psychological strain and deteriorating mental health (Yucekaya et al., 2025).

Gender has been consistently observed to introduce meaningful variation in optimism and pessimism perceptions among young athletes (Kurova et al., 2023). Research conducted with football students has demonstrated a direct relationship between optimism and academic achievement (Ghyaidh, 2025). Enhancing mindfulness has been shown to stabilize optimism and minimize the adverse effects of pessimism (Astuti, Orhan, Karacam, Erianti and Govindasamy, 2024). In high-stress disciplines such as combat sports, optimism and pessimism orientations exert direct influence on competitive outcomes (Ozmaden, Guler, Dokuzoglu and Saracoglu, 2025). Optimism combined with self-regulatory capacities has also been identified as a psychological buffer during crises such as the COVID-19 pandemic (Song and Lee, 2021).

The primary aim of the present study was to determine the optimism and pessimism levels of students enrolled in a Faculty of Sports Sciences and to examine whether these levels are differentiated by gender, injury history, weekly training frequency, and a range of additional demographic and sport-related variables. The findings are expected to inform psychological counseling practices in sports education and the mental dimension of training programming. In line with the research aim and existing literature, the following hypotheses were formulated: (H1) Female students will report higher pessimism scores than male students; (H2) Students with injury history will report lower optimism and higher pessimism scores compared to uninjured students; (H3) Weekly training frequency will be significantly associated with optimism levels, with a moderate frequency group expected to score highest; (H4) Optimism and pessimism will show a statistically significant but weak reciprocal predictive relationship, reflecting their partial independence as distinct psychological constructs.

METHODS

Research Design

The study was conducted within a descriptive and relational survey framework, designed to determine whether the optimism and pessimism levels of sports sciences students differ according to various demographic and sport-related variables. Relational survey models

aim to determine the presence or degree of co-variation between two or more variables (Karasar, 2020).

Participants

The target population of the study comprised all students enrolled at Yalova University Faculty of Sports Sciences during the 2024-2025 academic year (total N=approximately 800 students across three departments). The study group comprised 361 students (Female: n=160, 44.3%; Male: n=201, 55.7%), all of whom participated on a voluntary basis. Participants were selected through convenience sampling, yielding an approximate response rate of 45%. To evaluate the adequacy of the sample size, an a priori power analysis was conducted using G*Power 3.1. For independent samples t-tests with a medium effect size ($d=0.50$), $\alpha=0.05$, and desired power of 0.80, a minimum sample of 128 participants was required; the present sample of 361 substantially exceeds this threshold, providing sufficient statistical power for the planned analyses. Ethical approval was granted by the Yalova University Social and Human Sciences Scientific Research Ethics Committee (Protocol No: 2024/76, Date: 16.05.2024). Written informed consent was obtained from all participants prior to data collection. In terms of departmental distribution, 52.1% (n=188) were enrolled in Coaching Education, 28.5% (n=103) in Sports Management, and 19.4% (n=70) in Recreation Management. With respect to grade level, 21.3% (n=77) were first-year, 23.8% (n=86) second-year, 24.9% (n=90) third-year, and 29.9% (n=108) fourth-year students.

Instruments

Two instruments were administered: a Personal Information Form collecting demographic data, and the Athletes' Optimism and Pessimism Scale (AOPS), developed by Tekkursun Demir (2022) to assess athletes' cognitive expectations regarding the future. The AOPS comprises 18 items organized into two subscales: (1) Optimism Subscale (items 1-9) — higher scores reflect positive beliefs regarding success and competence; (2) Pessimism Subscale (items 10-18) — higher scores reflect low performance expectations and a belief in the persistence of failure. Responses are recorded on a five-point Likert-type scale ranging from "Never (1)" to "Always (5)"; subscale scores range from 9 to 45. In the original scale development study, Cronbach's alpha internal consistency coefficients were reported as $\alpha=.91$ for the Optimism subscale and $\alpha=.90$ for the Pessimism subscale (Tekkursun Demir, 2022), indicating high reliability. In the present study, Cronbach's alpha coefficients were calculated for the current sample and found to be $\alpha=.88$ for the Optimism subscale and $\alpha=.87$ for the

Pessimism subscale, confirming satisfactory internal consistency of the instrument within this sample.

Statistical Analysis

All statistical analyses were performed using IBM SPSS Statistics 26.0 (IBM Corp., Armonk, NY). Normality was assessed via skewness and kurtosis coefficients; as both indices remained within the ± 1.5 threshold, parametric tests were preferred (George and Mallery, 2010). Pearson correlation analysis, Independent Samples t-tests, one-way Analysis of Variance (ANOVA), and simple linear regression analyses were employed. Effect sizes were calculated as Cohen's d for t-test results and eta-squared (η^2) for ANOVA results; values of 0.20-0.49, 0.50-0.79, and ≥ 0.80 were interpreted as small, medium, and large effects, respectively (Cohen, 1988). The statistical significance level was set at $p < 0.05$.

RESULTS

The findings of the present study are presented through t-test and ANOVA comparisons of optimism and pessimism scores across a range of demographic and sport-related variables. Results are reported in Tables 1-13 below.

Table 1. t-Test Results by Gender

Variable	n (F)	M (F)	SD (F)	n (M)	M (M)	SD (M)	t	p
Optimism	160	3.028	0.520	201	3.013	0.434	0.300	0.765
Pessimism	160	3.069	0.449	201	2.952	0.490	2.322	0.021*
Total	160	3.048	0.373	201	2.983	0.345	1.732	0.084

No statistically significant difference was identified on the optimism subscale ($t=0.300$; $p=0.765$; $d=0.032$). Female participants scored significantly higher on pessimism ($M=3.069$, $SD=0.449$) than males ($M=2.952$, $SD=0.490$) ($t=2.322$; $p=0.021$; $d=0.248$). No significant difference was observed for total scores ($t=1.732$; $p=0.084$).

Note. F: Female; M: Male; n: sample size; M (column header): Mean; SD: Standard Deviation; t: t-statistic; p: significance level. * $p < .05$.

Table 2. t-Test Results by Sport License Status

Variable	n (Licensed)	M	SD	n (Unlicensed)	M	SD	t	p
Optimism	201	3.013	0.472	160	3.028	0.477	-0.300	0.765
Pessimism	201	3.009	0.489	160	2.998	0.459	0.217	0.829
Total	201	3.011	0.357	160	3.013	0.363	-0.054	0.957

Sport license status was not associated with significant differences on any subscale (optimism: $t=-0.300$, $p=0.765$; pessimism: $t=0.217$, $p=0.829$; total: $t=-0.054$, $p=0.957$).

Table 3. t-Test Results by Sport Type

Variable	n (Team)	M	SD	n (Individual)	M	SD	t	p
Optimism	170	3.032	0.437	191	3.008	0.505	0.478	0.633
Pessimism	170	2.990	0.438	191	3.017	0.507	-0.545	0.586
Total	170	3.011	0.320	191	3.013	0.391	-0.045	0.964

Sport type (team vs. individual) did not produce statistically significant differences on optimism ($t=0.478$; $p=0.633$; $d=0.051$), pessimism ($t=-0.545$; $p=0.586$; $d=0.057$), or total scores ($t=-0.045$; $p=0.964$).

Table 4. t-Test Results by Chronic Condition Status

Variable	n (No Chronic)	M	SD	n (Chronic)	M	SD	t	p
Optimism	311	3.038	0.476	50	2.902	0.443	1.891	0.059
Pessimism	311	3.006	0.480	50	2.989	0.452	0.242	0.809
Total	311	3.022	0.364	50	2.946	0.318	1.406	0.161

Chronic health condition was not associated with significant differences on any subscale (optimism: $t=1.891$, $p=0.059$, $d=0.288$; pessimism: $t=0.242$, $p=0.809$; total: $t=1.406$, $p=0.161$). The near-threshold p-value of 0.059 on optimism warrants consideration in future research with larger samples.

Table 5. t-Test Results by Injury Experience

Subscale	Injury Status	n	M	SD	t	p
Optimism	No Injury	218	3.92	0.65	2.145	0.032*
	Injured	143	3.74	0.72		
Pessimism	No Injury	218	2.05	0.54	-3.280	0.001*
	Injured	143	2.38	0.68		

Injury experience produced significant differences on both subscales. Participants with no injury history scored higher on optimism ($M=3.92$, $SD=0.65$ vs. $M=3.74$, $SD=0.72$; $t=2.145$; $p=0.032$; $d=0.265$) and lower on pessimism ($M=2.05$, $SD=0.54$ vs. $M=2.38$, $SD=0.68$; $t=-3.280$; $p=0.001$; $d=0.551$) compared to injured participants. Given the cross-sectional design, this pattern reflects an association between injury experience and athletes' cognitive appraisal patterns rather than a directional or causal relationship.

*Note. No Injury: participants with no self-reported history of sport-related injury; Injured: participants with at least one self-reported sport-related injury; n: sample size; M: Mean; SD: Standard Deviation; t: t-statistic; p: significance level. *p < .05.*

Table 6. One-Way ANOVA Results by Department

Variable	Sports Mgt. (M±SD)	Coaching (M±SD)	Recreation (M±SD)	F	p
Optimism	3.020±0.506 (n=103)	3.032±0.464 (n=188)	2.984±0.457 (n=70)	0.259	0.772
Pessimism	3.067±0.479 (n=103)	2.962±0.475 (n=188)	3.025±0.467 (n=70)	1.727	0.179
Total	3.044±0.376 (n=103)	2.997±0.353 (n=188)	3.005±0.351 (n=70)	0.584	0.558

Departmental affiliation was not associated with significant differences on any subscale (optimism: $F=0.259$, $p=0.772$, $\eta^2=0.001$; pessimism: $F=1.727$, $p=0.179$, $\eta^2=0.010$; total: $F=0.584$, $p=0.558$).

Table 7. One-Way ANOVA Results by Years of Training

Variable	1-3 yrs (M±SD)	4-6 yrs (M±SD)	7-9 yrs (M±SD)	10+ yrs (M±SD)	F	p
Optimism	3.021±0.473 (n=169)	3.012±0.476 (n=89)	3.030±0.502 (n=48)	3.016±0.460 (n=55)	0.016	0.997
Pessimism	3.033±0.463 (n=169)	2.943±0.459 (n=89)	3.019±0.517 (n=48)	3.002±0.505 (n=55)	0.716	0.543
Total	3.027±0.357 (n=169)	2.978±0.347 (n=89)	3.024±0.365 (n=48)	3.009±0.383 (n=55)	0.390	0.761

Years of training did not produce significant differences on any subscale (optimism: $F=0.016$, $p=0.997$; pessimism: $F=0.716$, $p=0.543$; total: $F=0.390$, $p=0.761$).

Table 8. ANOVA and Tukey Post-Hoc Results by Weekly Training Frequency

Variable	1-2 Days/wk (M±SD)	3-4 Days/wk (M±SD)	5+ Days/wk (M±SD)	F	p
Optimism	2.970±0.460 (n=124)	3.141±0.527 (n=112)	2.960±0.416 (n=125)	5.487	0.005**
Pessimism	2.948±0.506 (n=124)	3.066±0.460 (n=112)	3.004±0.454 (n=125)	1.834	0.161
Total	2.959±0.382 (n=124)	3.104±0.358 (n=112)	2.982±0.321 (n=125)	5.601	0.004**

No significant difference was found on the pessimism subscale ($F=1.834$; $p=0.161$). Significant differences were identified for optimism ($F=5.487$; $p=0.005$; $\eta^2=0.030$) and total scores ($F=5.601$; $p=0.004$; $\eta^2=0.030$). Tukey HSD post-hoc analysis was conducted to identify which specific groups differed from one another. For the optimism subscale, pairwise comparisons revealed that the 3-4 days/week group ($M=3.141$, $SD=0.527$) scored significantly

higher than both the 1-2 days/week group ($M=2.970$, $SD=0.460$; $p=0.008$) and the 5+ days/week group ($M=2.960$, $SD=0.416$; $p=0.007$). No significant difference was found between the 1-2 days/week and 5+ days/week groups ($p=0.981$). The same pattern was observed for total scores: the 3-4 days/week group ($M=3.104$) scored significantly higher than the 1-2 days/week ($M=2.959$; $p=0.006$) and 5+ days/week ($M=2.982$; $p=0.018$) groups, while the latter two groups did not differ significantly from each other ($p=0.870$). These pairwise results indicate an inverted-U relationship between weekly training frequency and optimism, with moderate training frequency associated with the highest optimism levels.

Table 9. One-Way ANOVA Results by Highest Achievement Level

Variable	School/Local (M±SD)	Regional (M±SD)	Prof./National (M±SD)	F	p
Optimism	3.005±0.435 (n=130)	2.996±0.490 (n=114)	3.058±0.499 (n=117)	0.583	0.559
Pessimism	3.004±0.486 (n=130)	2.994±0.470 (n=114)	3.013±0.473 (n=117)	0.047	0.954
Total	3.005±0.357 (n=130)	2.995±0.357 (n=114)	3.036±0.364 (n=117)	0.405	0.667

Achievement level was not associated with significant differences on any subscale (optimism: $F=0.583$, $p=0.559$; pessimism: $F=0.047$, $p=0.954$; total: $F=0.405$, $p=0.667$).

Table 10. One-Way ANOVA Results by Income Level

Variable	Low (M±SD)	Moderate (M±SD)	High (M±SD)	F	p
Optimism	3.018±0.490 (n=173)	3.026±0.461 (n=143)	3.002±0.456 (n=45)	0.045	0.956
Pessimism	3.032±0.451 (n=173)	3.015±0.500 (n=143)	2.862±0.473 (n=45)	2.371	0.095
Total	3.025±0.350 (n=173)	3.021±0.367 (n=143)	2.932±0.362 (n=45)	1.273	0.281

Income level was not associated with significant differences on any subscale (optimism: $F=0.045$, $p=0.956$; pessimism: $F=2.371$, $p=0.095$; total: $F=1.273$, $p=0.281$).

Table 11. One-Way ANOVA Results by Future Anxiety Level

Variable	Very Low (M±SD)	Low (M±SD)	Moderate (M±SD)	High (M±SD)	Very High (M±SD)	F	p
Optimism	3.015±0.510 (n=80)	2.965±0.497 (n=70)	3.056±0.456 (n=63)	3.016±0.445 (n=77)	3.049±0.460 (n=71)	0.393	0.813
Pessimism	3.031±0.478 (n=80)	3.033±0.433 (n=70)	3.046±0.403 (n=63)	3.013±0.516 (n=77)	2.898±0.522 (n=71)	1.137	0.339
Total	3.023±0.376 (n=80)	2.999±0.352 (n=70)	3.051±0.291 (n=63)	3.014±0.372 (n=77)	2.973±0.390 (n=71)	0.432	0.786

Future anxiety level was not significantly associated with differences on any subscale (optimism: $F=0.393$, $p=0.813$; pessimism: $F=1.137$, $p=0.339$; total: $F=0.432$, $p=0.786$).

Table 12. Simple Linear Regression Analysis Results

Model	Constant (β_0)	β_1	r	R ²	p
Age → Optimism	3.078	-0.003	-0.017	0.000	0.744
Age → Pessimism	3.247	-0.011	-0.072	0.005	0.173
Pessimism → Optimism	2.590	0.143	0.144	0.021	0.006**
Optimism → Pessimism	2.569	0.144	0.144	0.021	0.006**

Age was not identified as a significant predictor of optimism ($\beta=-0.003$; $R^2=0.000$; $p=0.744$) or pessimism ($\beta=-0.011$; $R^2=0.005$; $p=0.173$). A statistically significant reciprocal predictive relationship was found between the two constructs ($\beta\approx 0.143$; $R^2=0.021$; $p=0.006$). The R^2 value of 0.021 indicates that only 2.1% of variance is shared, confirming that the two subscales are largely independent constructs, consistent with Scheier, Carver and Bridges (1994).

Table 13. One-Way ANOVA Results by Grade Level

Variable	1st Year (M±SD)	2nd Year (M±SD)	3rd Year (M±SD)	4th Year (M±SD)	F	p
Optimism	2.991±0.532 (n=77)	2.960±0.416 (n=86)	3.096±0.455 (n=90)	3.023±0.486 (n=108)	1.338	0.262
Pessimism	3.016±0.445 (n=77)	3.072±0.457 (n=86)	3.025±0.500 (n=90)	2.924±0.486 (n=108)	1.697	0.167
Total	3.004±0.363 (n=77)	3.016±0.332 (n=86)	3.060±0.362 (n=90)	2.973±0.373 (n=108)	0.985	0.400

Grade level was not associated with statistically significant differences on any subscale (optimism: $F=1.338$, $p=0.262$; pessimism: $F=1.697$, $p=0.167$; total: $F=0.985$, $p=0.400$).

DISCUSSION and CONCLUSION

The present study examined the optimism and pessimism levels of 361 students enrolled at Yalova University Faculty of Sports Sciences in terms of various variables. The findings are discussed in relation to the existing literature, followed by overall conclusions and evidence-based recommendations.

Among the most prominent findings was the statistically significant gender difference on the pessimism subscale, with female students obtaining higher pessimism scores than their male counterparts ($t=2.322$; $p=0.021$; $d=0.248$). No significant gender difference was identified

on the optimism subscale. This finding is partially consistent with Kurova et al. (2023), who reported that female athletes were more prominently characterized by negative mental states reflecting protection and avoidance orientations. Ozmaden et al. (2025) similarly reported a gender difference in pessimism unfavorable to female athletes in combat sports, directly corroborating the present finding. Wilson, Raglin and Pritchard (2002) found that female university-level athletes scored higher than males on pre-competition anxiety estimates, and Tan and Tuzemen (2025) reported higher pessimism in female high school students. Collectively, these findings suggest an association between gender and pessimism; however, given the cross-sectional design of the present study, no causal direction can be inferred. It is plausible that social pressure, performance anxiety, and gender-based stereotype threat may be related to the higher pessimism observed among female students, yet longitudinal research is needed to examine these relationships more rigorously.

The finding with the largest effect size in the study pertains to injury experience. Students with injury history showed significantly lower optimism ($t=2.145$; $p=0.032$; $d=0.265$) and significantly higher pessimism ($t=-3.280$; $p=0.001$; $d=0.551$) compared to uninjured peers. The effect size for pessimism ($d=0.551$) represents the most practically meaningful result of the study. It should be noted that, given the cross-sectional design of the present study, the direction of this association cannot be established; it is equally plausible that lower optimism and higher pessimism preceded injury, or that injury experience was associated with changes in cognitive outlook. In a mediation analysis by Arindi, Adilogullari and Ozgider (2025) involving 739 licensed athletes, injury history was found to be associated with reduced confidence in physical capacities. Ortin-Montero et al. (2018) demonstrated in a systematic review that optimistic athletes tended to maintain or enhance performance following adverse outcomes, whereas pessimistic athletes tended to show performance decrements. Reche et al. (2018) noted that optimistic coping mechanisms may be associated with reduced pessimism during injury recovery. These findings point to the potential value of integrating psychological support programs with physiotherapeutic rehabilitation, though experimental or longitudinal studies are needed to establish directional relationships.

The inverted-U relationship observed between weekly training frequency and optimism constitutes the theoretically most compelling finding. Students training 3-4 days per week ($M=3.14$) scored significantly higher than both the 1-2 days ($M=2.97$) and 5+ days ($M=2.96$) groups ($F=5.487$; $p=0.005$; $\eta^2=0.030$), while no significant between-group difference was found on the pessimism subscale. This result is consistent with the 15-year longitudinal study by Karhu et al. (2025), which reported high optimism as associated with long-term physical

activity engagement. Hussain, Ahmad and Fatima (2023) highlighted that sports-specific optimism is positively associated with motivation. From the perspective of overtraining syndrome, Angosto et al. (2021) found that high training volumes were associated with elevated burnout risk and lower optimism among kayak polo players, which may account for the pattern observed in the 5+ days group. However, since the present study is cross-sectional, it is not possible to determine whether training frequency influences optimism, or whether more optimistic students self-select into moderate training regimens.

Regression analyses revealed a statistically significant reciprocal predictive relationship between optimism and pessimism ($\beta \approx 0.143$; $R^2 = 0.021$; $p = 0.006$), though the shared variance was limited to 2.1%. This finding supports the characterization of the two constructs as largely independent psychological systems, consistent with the dispositional optimism theory of Scheier, Carver and Bridges (1994). Karhu et al. (2025) reported that low pessimism was a stronger predictor of certain health outcomes than high optimism, reinforcing the importance of analyzing the two constructs separately. Ghyaith (2025) found a positive correlation between optimism and pessimism in sports sciences students, emphasizing that both constructs should be treated as autonomous yet related systems. The low shared variance indicates that interventions augmenting optimism cannot be expected to automatically reduce pessimism, necessitating comprehensive programs that target both dimensions as independent goals.

No significant differences in optimism or pessimism were observed across department, grade level, sport license status, sport type, years of training, achievement level, income level, or future anxiety. Ozmaden et al. (2025) similarly found that sport discipline and athletic background did not produce significant differences, directly aligning with the present findings for sport type and training years. Reche et al. (2018) also reported that gender and competitive level were not determinants of optimism in fencing athletes, indicating cross-study consistency for certain variables.

Taken together, the present study provides evidence that the optimism and pessimism profiles of sports sciences faculty students are differentially associated with injury history, gender, and weekly training frequency, while remaining largely independent of departmental affiliation, grade level, sport type, years of training, achievement level, income level, and future anxiety. The most practically significant finding is the medium-sized association between injury experience and higher pessimism ($d = 0.551$), which highlights the psychological dimension of athlete rehabilitation and the need for integrated biopsychosocial support structures in sports education. The gender difference on the pessimism subscale ($d = 0.248$) and the inverted-U pattern between training frequency and optimism ($\eta^2 = 0.030$) further underscore

the importance of tailoring psychological support to individual athlete profiles. The reciprocal but weak predictive relationship between optimism and pessimism ($R^2=0.021$) confirms that these constructs function as partially independent psychological systems, with important implications for intervention design: programmes targeting only optimism cannot be assumed to reduce pessimism, and vice versa. Comprehensive, multi-component psychological interventions addressing both constructs as distinct targets are therefore recommended for sports sciences education settings.

Limitations

The present study has several methodological limitations that should be considered when interpreting the findings. First, the cross-sectional design precludes any causal or directional inferences; the observed associations between variables such as injury experience, training frequency, gender, and optimism/pessimism levels reflect correlational relationships only. Second, the study relied exclusively on convenience sampling from a single institution, namely Yalova University Faculty of Sports Sciences, which limits the generalizability of the findings to other universities, regions, or cultural contexts. Third, all data were collected through self-report measures, which are subject to potential response biases such as social desirability and recall bias, particularly regarding injury history. Fourth, the injury variable was operationalized as a binary category (injured vs. not injured) without distinguishing between injury type, severity, duration, or recency, which may have obscured important within-group differences. Fifth, optimism and pessimism were assessed solely through the AOPS instrument; the inclusion of additional measures or qualitative methods could have provided a richer understanding of these constructs in the sports sciences student population.

Recommendations and Implications

Based on the findings of the present study, several practical and research-oriented recommendations can be offered. From a practical standpoint, the significant association between injury experience and elevated pessimism ($d=0.551$) underscores the importance of integrating psychological support services into sports medicine and rehabilitation programs at sports sciences faculties. Psychological counseling and cognitive-behavioral interventions targeting pessimistic thought patterns should be made routinely available to injured student-athletes, rather than being offered solely on an ad hoc basis. Faculty administrators and coaches should be trained to recognize the psychological correlates of injury, as early identification of pessimistic cognitive patterns may facilitate more effective and holistic recovery. Regarding gender differences, the finding that female students reported higher pessimism warrants targeted psychoeducational programs that address stereotype threat, performance anxiety, and

confidence-building among female student-athletes. Concerning training frequency, the inverted-U pattern suggests that both insufficient and excessive training may be associated with lower optimism; sports programmes should therefore promote moderate, structured training regimens that balance physical development with psychological well-being. From a research perspective, future studies should adopt longitudinal designs to examine the developmental trajectories of optimism and pessimism across academic years and competitive seasons. Multi-institutional and cross-cultural comparative studies would enhance the generalizability of the findings. The injury variable should be operationalized in greater detail, incorporating measures of injury type (acute vs. chronic), severity, duration, and time since recovery. Intervention studies employing experimental or quasi-experimental designs are also needed to test whether targeted psychological programs can effectively and independently modify optimism and pessimism levels, given the relative independence of these two constructs demonstrated in the present study.

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