

An Empirical Study on the Influencing Factors and Promotion Strategies of College Students' Physical Exercise Behaviour Based on Social Cognitive Theory

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Abstract

This study examines the key factors influencing college students' engagement in physical exercise and proposes relevant strategies for promotion, grounded in Social Cognitive Theory (SCT). A survey of 500 college students was conducted, with the data analysed using Structural Equation Modelling (SEM). The findings reveal that self-efficacy, social support, and environmental factors exert a significant influence on students' physical exercise behaviours. Moreover, the study identifies attitudes and intentions as mediators in the relationship between self-efficacy and physical exercise behaviour. In light of these results, the study recommends strategies aimed at enhancing students' self-efficacy in physical exercise, strengthening social support systems, and improving the exercise environment. This research offers both theoretical insights and empirical evidence to assist universities in formulating effective policies to promote physical exercise among students.

Keywords: College Students; Physical Exercise Behaviour; Social Cognitive Theory; Self-Efficacy; Outcome Expectations; Perceived Barriers; Promotion Strategies; Physical Activity Programs; Health Promotion; Evidence-Based Intervention.

Introduction

Building a harmonious society is regarded as a pivotal objective for a nation's long-term economic and social progress, particularly as individuals shift their focus from basic survival to the broader development of society. A significant factor contributing to the decline in college students' happiness is the rising prevalence of mental health issues (Wang et al., 2022). University life represents a period of rapid psychological and physiological growth, during which individuals experience considerable development in their character traits, mental health, and physical well-being (Graupensperger et al., 2020). At the same time, the pressures of academic responsibilities, career prospects, and life challenges often lead to significant interpersonal, emotional, and internal conflicts (Graupensperger et al., 2020). Enhancing the mental health of college students and fostering their overall sense of joy are vital for their healthy development and successful adaptation to societal changes. Notably, the term "happiness" has been frequently cited in national sports policy documents, often by sports scholars. This raises the question: is it possible for college students to derive greater happiness from physical education (PE) classes? The theory that "sports promote the happiness of college students" has sparked significant interest, establishing a promising subfield within sports research.

Physical exercise is essential for both physical and mental well-being, especially among college students. Regular activity reduces the risk of chronic diseases, enhances mental health, and promotes social interaction. However, physical inactivity remains a significant issue globally among students. Research highlights that physical activity is integral to overall well-being, improving emotional health, cognitive abilities, academic performance, and life satisfaction (Bull et al., 2020; Marquez et al., 2020), particularly noting the low participation rates among college students.

SCT (Stajkovic & Sergent, 2019), developed by Albert Bandura, provides a comprehensive framework for understanding the development and modification of behaviour. SCT posits that behaviour is shaped by reciprocal determinism, which involves the interplay between personal factors, environmental conditions, and behavioural actions. Applying SCT to the study of college students' exercise behaviours allows for a thorough examination of the factors influencing their engagement in physical activity. SCT serves as a robust theoretical foundation for exploring exercise patterns among college students (Liu et al., 2020) and for developing effective strategies to encourage physical activity, as the understanding of the social and psychological elements influencing behaviour continues to evolve.

Although the benefits of exercise for health are widely

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acknowledged, college students often experience a decline in physical activity as they navigate the social, academic, and environmental pressures of university life (Herbert, 2022). The sedentary lifestyle associated with prolonged study sessions, excessive internet use, and social distractions increases students' susceptibility to adverse health outcomes (Rajeshwari, 2021). University environments often lack sufficient support for promoting physical activity, with limited accessible and engaging opportunities for regular exercise. Given the ongoing challenges students face, it is crucial to identify the factors influencing their participation in physical activities and explore how institutional policies and social structures can foster positive behaviours. The primary aim of this study is to examine the factors that impact college students' exercise behaviour, using Social Cognitive Theory as a framework, and to propose evidence-based strategies to increase exercise frequency among this population. Specifically, we seek to develop targeted promotional strategies based on SCT principles to enhance exercise participation among college students.

This study is justified for two primary reasons: first, to address the health consequences of physical inactivity among college students, and second, to contribute to the existing body of knowledge on the application of SCT in understanding health-related behaviours. Targeting college students is particularly important as they are at a critical stage of habit formation. By applying SCT to the study of exercise behaviours, this research highlights modifiable factors such as social support and self-efficacy, which, through targeted intervention programs, can be adjusted to promote long-term behavioural change.

Furthermore, this study addresses a gap in the current literature by empirically examining the exercise behaviours of college students through the lens of the SCT framework. While some research has explored the application of SCT to exercise (Brown et al., 2023), few studies have focused specifically on college students (Lin & Gao, 2023), a demographic with distinct social and environmental contexts. This research will contribute to the existing body of knowledge on health behaviour theories and demonstrate the applicability of SCT in addressing health-related issues within educational institutions.

This study is significant as it has the potential to influence programs and policies designed to promote physical fitness among college students. By identifying and analysing the factors that influence exercise behaviours through the SCT, the research will provide universities, policymakers, and healthcare professionals with evidence-based solutions to enhance students' health and well-being. The findings may, for example, underscore the need for more

exercise-friendly university environments, student-led fitness initiatives, or reward systems that foster students' confidence in their abilities. Additionally, college administrations aiming to cultivate a health-oriented campus culture will find the results of this study particularly valuable. Using data on social and psychological factors, university programs can be better aligned with students' interests, increase peer involvement, and address specific motivational needs. Moreover, this study lays the foundation for future research applying SCT in public health and education to explore behavioural interventions across various groups and contexts.

Literature Review

Albert Bandura's SCT, developed in the 1970s, provides a prominent theoretical framework for understanding the development and emergence of human behaviour. Central to SCT is the concept of "triadic reciprocal causation" (Bergman et al., 2019), which describes the intricate interactions between individuals and their environments that shape behaviour. Key elements within this framework include an individual's cognitive processes, social context, behaviour, self-efficacy, and the social support received from others. Self-efficacy, defined as the belief in one's ability to achieve specific goals, is a crucial factor in understanding motivation and persistence (Schunk & DiBenedetto, 2021). Bandura argues that individuals are more likely to persevere, even in the face of challenges, if they believe in their capabilities. In contrast, those who lack confidence in their abilities may give up more readily (Talwar et al., 2023).

An individual's confidence in their abilities is positively correlated with their likelihood of maintaining an exercise routine, deriving enjoyment from physical activity, and persisting through setbacks (Rodrigues et al., 2023). A central concept in SCT is outcome expectancies, which refer to personal beliefs about the potential outcomes of an activity (Bohlen et al., 2021). Whether the desired outcome is general fitness or weight loss, individuals are more inclined to engage in exercise if they believe it will benefit their health. Positive expectations about the results of exercise motivate individuals to participate, particularly when these expectations align with their intrinsic goals (Gupta et al., 2021).

In addition to individual factors, SCT emphasises the role of the environment in shaping behaviour. The physical environment, such as access to exercise facilities, and the social environment, which includes support from friends, family, and peers, are two significant environmental influences. von Sommoggy et al. (2020) argue that convenient access to sports facilities and a supportive environment substantially increase the likelihood of college students

engaging in physical activity. Furthermore, for sustained engagement, college students should prioritise developing a strong social support system.

While SCT offers valuable insights into exercise behaviours, other factors beyond self-efficacy and social support also influence exercise habits. Research suggests that individual characteristics, social context, and environmental factors collectively shape whether and how long a person engages in exercise (Han, 2021). Motivation plays a crucial role, with intrinsic motivation, driven by personal interest and enjoyment, being a stronger indicator of exercise persistence among college students compared to extrinsic motivation, which is influenced by external factors like health outcomes or social approval (Fishbach & Woolley, 2022; Ryan & Deci, 2020). However, many first-year students struggle with time management due to academic, social, and work pressures, often prioritising academic success over physical fitness (Cameron & Rideout, 2022; Mahdy, 2020).

The environment, particularly the availability of exercise opportunities, also significantly impacts students' exercise habits. Encouraging physical activity among students is heavily dependent on easy access to sports facilities and an environment conducive to exercise. Students are more likely to engage in regular physical activity when sports facilities are easily accessible and well-maintained (Sun et al., 2021). Campus-wide events and physical education courses also play a significant role in shaping students' exercise behaviours. Those with access to diverse exercise options, a pleasant campus environment, and regular sports events are more inclined to remain active (Herbert, 2022). Even students without strong athletic abilities can benefit greatly from a variety of activities and a supportive training environment.

Encouraging college students to exercise requires a multifaceted approach. Firstly, enhancing self-efficacy through achievable, short-term exercise goals can boost motivation (Wachs et al., 2023). Universities can support this by organising physical challenges and activities. Secondly, fostering social networks through group activities or sports teams can transform exercise into a social event, increasing participation (McDermott et al., 2022). Additionally, improving campus environments and access to well-maintained facilities encourages regular physical activity.

While previous studies have explored factors influencing exercise behaviour, many use cross-sectional methods, limiting causal conclusions. Future research should adopt longitudinal approaches to better understand how these factors evolve. Moreover, there is a need for more studies in non-Western contexts, such as China, to provide a stronger theoretical foundation for encouraging physical activity in these regions.

Methods

This study employed a cross-sectional survey design, utilising quantitative methods to explore the factors influencing college students' physical exercise behaviour. A survey-based approach was selected due to its efficiency in collecting large-scale data from a specific population, enabling the analysis of relationships between key constructs derived from SCT. In addition to mediating variables such as attitudes and intentions, the primary variables of interest included exercise behaviour, social support, self-efficacy, and environmental factors. Following data collection through a standardised questionnaire, SEM was utilised to examine the interrelationships between these variables.

The participants in this study were graduates from a large Chinese university. A random sampling method was utilised to ensure that the sample accurately represented the broader student population. Students from various academic departments, year levels, and programs were selected randomly, allowing for inclusion of individuals from diverse socioeconomic backgrounds, physical activity levels, and life experiences. Of the 600 surveys distributed, 500 valid responses were received, resulting in an effective response rate of 83.3%. The final sample consisted of 250 male and 250 female students, aged between 18 and 24 ($M = 20.4$, $SD = 1.2$).

The components of interest in this study were measured using several validated scales. A structured questionnaire was developed to assess the key factors. The questionnaire included the following sections: To assess physical exercise behaviour, the International Physical Activity Questionnaire (IPAQ) was used. This scale measured participants' frequency, duration, and intensity of exercise over the past seven days. Participants reported their daily physical activity levels (mild, moderate, or intense), average exercise duration, and the frequency of their exercise sessions.

To assess self-efficacy in relation to physical activity, the Exercise Self-Efficacy Scale developed by Bandura (Lin & Gao, 2023) was utilised. This scale consists of ten items designed to measure individuals' confidence in their ability to exercise despite various challenges (e.g., "I am confident that I can continue exercising even if I feel tired"). Responses were scored using a 5-point Likert scale, where 1 represented "Strongly Disagree" and 5 represented "Strongly Agree".

Social support for exercise was measured using a modified scale designed to assess the extent of support and encouragement individuals receive from family, friends, and institutions for physical activity. Participants rated the frequency of receiving support for each of the 12 items on a 5-point Likert scale, with 1 representing "Never" and 5 representing "Always.". Environmental factors, including

the accessibility, safety, and acceptability of exercise facilities on campus, were evaluated using the Perceived Environment for Physical Activity Scale. One of the items in this scale, for example, was "It is easy to access sports facilities on campus. Each item was scored on a 5-point scale, with 1 indicating "Strongly Disagree" and 5 indicating "Strongly Agree".

The Physical Activity Attitudes Scale, a 6-item measure, was used to assess individuals' attitudes toward exercise, capturing their beliefs about the importance and benefits of physical activity. Additionally, the participants' intentions to engage in future exercise were evaluated using four items derived from prior research on intention formation and exercise behaviour. Data analysis was conducted using SPSS 26.0 and AMOS 24.0. Descriptive statistics, Cronbach's alpha, and confirmatory factor analysis (CFA) were performed to assess reliability and construct validity. SEM was then used to examine the relationships between exercise behaviour, attitudes, intentions, social support, environmental factors, and self-efficacy. This method was chosen for its ability to simultaneously assess multiple variable correlations while accounting for measurement error. Model fit was evaluated using indices such as ω^2/df , RMSEA, and CFI. A good model fit is indicated by ω^2/df values below 3, RMSEA values below 0.08, and CFI values above 0.90, which collectively assess the robustness of the model's predictions.

Mediation Analysis: Bootstrapping techniques were used to assess the mediating role of attitudes and intentions in the self-efficacy-exercise behaviour relationship, revealing statistically significant indirect effects.

Results

Table 1 shows primary variable descriptive statistics. The mean score for physical exercise behaviour was 3.85 (SD =

Table 2

Correlation Matrix of Key Variables

Variables	Physical Exercise behaviours	Self-Efficacy	Social Support	Environmental Factors	Attitude	Intention
Physical Exercise Behaviours	1.00	0.45	0.32	0.30	0.48	0.50
Self-Efficacy	0.45	1.00	0.40	0.28	0.44	0.46
Social Support	0.32	0.40	1.00	0.36	0.33	0.38
Environmental Factors	0.30	0.28	0.36	1.00	0.34	0.31
Attitudes	0.48	0.44	0.33	0.34	1.00	0.52
Intentions	0.50	0.46	0.38	0.31	0.52	1.00

Using SEM, the hypothesised structural equation model was tested; Table 3 shows the fit indices. Indicating a

0.72), indicating moderate exercise engagement. Self-efficacy averaged 4.23 (SD = 0.61), indicating that most students felt confident in their physical exercise abilities. Social support and environmental factors had mean ratings of 3.65 (SD = 0.82) and 3.90 (SD = 0.78), respectively, indicating moderate support and exercise facility access. Attitudes (M = 4.12, SD = 0.68) and intentions (M = 4.25, SD = 0.73) were highly rated, indicating optimistic views and strong exercise goals. All scales have Cronbach's alpha values over 0.70, indicating strong measurement internal consistency.

Table 1

Descriptive Statistics of Key Variables

Variables	Mean	Standard Deviation	Cronbach's Alpha
Physical Exercise Behaviour	3.85	0.72	0.84
Self-Efficacy	4.23	0.61	0.88
Social Support	3.65	0.82	0.81
Environmental Factors	3.90	0.78	0.79
Attitudes	4.12	0.68	0.83
Intentions	4.25	0.73	0.85

Key variable correlation coefficients are in Table 2. Predictably, students with higher self-efficacy were more inclined to exercise regularly ($r = 0.45$, $p < 0.001$). Moderate positive associations were found between exercise behaviour and social support ($r = 0.32$, $p < 0.001$) and environmental factors ($r = 0.30$, $p < 0.001$). Attitudes ($r = 0.48$, $p < 0.001$) and intentions ($r = 0.50$, $p < 0.001$) strongly correlated with exercise behaviour, highlighting their importance in fostering physical activity. Additionally, self-efficacy was highly linked with attitudes ($r = 0.44$, $p < 0.001$) and intents ($r = 0.46$, $p < 0.001$).

decent fit, the chi-square to degrees of freedom ratio (χ^2/df) was 2.45, within the allowed range (less than 3).

With a root mean square error of approximation (RMSEA) of 0.06, which was below the advised 0.08, the fit was really satisfactory. Both surpassing the required threshold of 0.90, the comparative fit index (CFI) and Tucker-Lewis index (TLI) were 0.95 and 0.93, respectively, respectively, so attesting to the general fit of the model. The well-fitting model was indicated by a standardised root mean square residual (SRMS) of 0.05. These indices together confirm that the suggested model sufficiently fits the data, therefore verifying the links between the constructs grounded on SCT.

Table 3

Model Fit Indices for Structural Equation Modelling (SEM)

Fit Indices	Values
Chi-Square/df	2.45
RMSEA	0.06
CFI	0.95
TLI	0.93
SRMR	0.05

A bootstrapping technique was used to test for indirect effects, therefore enabling additional investigation of the mediating function of attitudes and intentions in the link between self-efficacy and exercise behaviour, with the outcomes reported in Table 4. With a 95% confidence interval [0.10, 0.30], the mediation analysis revealed that the indirect effect of self-efficacy on exercise behaviour via attitudes was significant (indirect effect = 0.20, $p = 0.002$). With a confidence interval [0.12, 0.24], the indirect effect of self-efficacy on exercise behaviour via intentions was likewise notable (indirect effect = 0.18, $p = 0.001$). Moreover, with a confidence interval [0.15, 0.29] attitudes were shown to influence the association between intentions and exercise activity (indirect effect = 0.22, $p = 0.001$).

Table 4

Mediation Analysis Results (Bootstrapping)

Paths	Indirect Effect	Bootstrapped Confidence Interval (95%)	p-value
Self-Efficacy ->			
Attitudes ->	0.20	0.10 - 0.30	0.002
Exercise Behaviours			
Self-Efficacy ->			
Intentions ->	0.18	0.12 - 0.24	0.001
Exercise Behaviours			
Attitudes ->			
Intentions ->	0.22	0.15 - 0.29	0.001
Exercise Behaviours			

Discussion

This study, grounded in SCT, explores college students' exercise motivations. Descriptive statistics revealed that students are generally active ($M = 3.85$), with high self-efficacy (4.23), attitudes (4.12), and intentions (4.25), indicating a strong intention to exercise regularly. Environmental and social support were rated moderately, suggesting students perceive them as accessible for maintaining activity. A significant positive correlation between self-efficacy and exercise behaviour ($r = 0.45$, $p < 0.001$) underscores its role as a predictor, aligning with SCT's assertion that confidence in one's abilities drives regular exercise. The strong correlations between self-efficacy, attitudes ($r = 0.44$), and intentions ($r = 0.46$) further support Bandura's (1986) view that self-efficacy influences behaviour, thoughts, and plans. Programs that boost self-belief, like mentorship and skill-building workshops, could encourage students to engage in physical activity. Additionally, positive correlations between environmental factors ($r = 0.30$) and social support ($r = 0.32$) with exercise activity suggest that accessible facilities and supportive social networks enhance exercise participation, corroborating previous research (Lin & Kishore, 2021).

Schools could promote physical activity by developing gyms and sports leagues where students can engage in group activities and receive positive feedback from their peers. Strong attitudes and goals are significantly linked with exercise behaviour ($r = 0.48$ and $r = 0.50$, respectively), making them crucial for encouraging physical activity. Self-efficacy mediated a 0.20 ($p = 0.002$) indirect effect of attitudes on exercise behaviour, and intentions mediated an indirect effect of 0.18 ($p = 0.001$). These findings align with the SCT model, which posits that individuals with high self-confidence are more likely to set positive goals and intentions that motivate them. This insight is valuable for intervention programmes aimed at modifying attitudes and reinforcing exercise intentions through campaigns, workshops, or mentorship. The results confirm that the SCT-based model accurately captures the interrelationships among key components, supporting its utility in explaining exercise behaviour. Furthermore, this model provides a framework for future research on similar topics in diverse settings. The mediation analysis also revealed that self-efficacy influences exercise habits through attitudes and intentions. As attitudes significantly influenced the relationship between self-efficacy and exercise behaviour, fostering positive attitudes toward exercise is crucial. Strong intentions further impacted this relationship (indirect

effect = 0.18, $p = 0.001$), highlighting their importance for action. These findings suggest that positive mindsets and achievable goals can drive exercise (Weinberg & Gould, 2023). In conclusion, this study enhances our understanding by offering an SCT framework to explore college students' exercise habits, emphasising the role of self-efficacy, social support, environmental factors, attitudes, and intentions in improving exercise behaviour within university health programmes.

Implications

This study offers valuable insights for college health promotion initiatives. The findings underscore the importance of enhancing self-efficacy, which plays a key role in influencing exercise behaviour. Goal-setting and skill-development programmes could help students feel more confident in their ability to engage in physical activity, thereby motivating them to exercise. Given the positive correlations between social support, environmental factors, and exercise behaviour, universities can foster exercise participation by creating supportive communities and providing easy access to fitness facilities. Organised group workouts or sports activities can further encourage involvement in exercise programmes. Investing in gyms and outdoor recreational areas can help reduce environmental barriers, making physical activity more accessible and appealing. Additionally, since attitudes and intentions are strong predictors of behaviour, health promotion programmes should focus on strengthening cognitive, motivational, and behavioural factors. Campaigns that emphasise the benefits of fitness can reshape attitudes, while incorporating goal-setting activities can enhance students' intentions and help them translate their beliefs into action.

Limitations and Future Research

Despite its valuable findings, this study has several limitations. Social desirability bias may have influenced the self-reported data on exercise behaviour and related factors. Future research should incorporate wearable

fitness trackers and other objective measures of physical activity to provide a more accurate understanding of student exercise habits. The sample size, consisting solely of college students, limits the generalisability of the results to other demographic groups. To enhance the model's applicability, future studies could include working adults or high school students to assess whether the identified relationships hold across different age groups and life stages. Longitudinal studies would also be beneficial in examining how attitudes, social support, and self-efficacy influence exercise behaviour over time. Additionally, research on personality traits and mental health could offer deeper insights into the complex factors influencing physical activity levels. These avenues of research may inform the development of more targeted and effective health promotion programmes tailored to individual characteristics.

Conclusion

The findings highlight the complex nature of college students' exercise patterns, shaped by psychological, social, and environmental factors. Using SCT, the study identifies key influences on exercise behaviour, including social support, outcome expectations, perceived barriers, and self-efficacy. These insights suggest that university health promotion campaigns should adopt a comprehensive approach, focusing on boosting students' self-confidence, clarifying the benefits of regular exercise, addressing common barriers, and fostering social support networks. To promote physical activity, universities should implement strategies that target five key areas: campaigns highlighting the psychological and physical benefits of exercise, accessible fitness programmes, peer support groups, and time management courses. Such interventions can have a lasting impact by reducing health-related issues and encouraging healthier behaviours. These findings provide valuable guidance for university officials and healthcare professionals aiming to enhance the effectiveness of campus health initiatives promoting physical activity.

References

- Bergman, Z., Bergman, M. M., & Thatcher, A. (2019). Agency and Bandura's Model of Triadic Reciprocal Causation: An Exploratory Mobility Study Among Metrorail Commuters in the Western Cape, South Africa [Original Research]. *Frontiers in Psychology, 10*. <https://doi.org/10.3389/fpsyg.2019.00411>
- Bohlen, L. C., Emerson, J. A., Rhodes, R. E., & Williams, D. M. (2021). A Systematic Review and Meta-analysis of the Outcome Expectancy Construct in Physical Activity Research. *Annals of Behavioral Medicine, 56*(7), 658-672. <https://doi.org/10.1093/abm/kaab083>
- Brown, N. I., Pekmezi, D. W., Oster, R. A., Courneya, K. S., McAuley, E., Ehlers, D. K., Phillips, S. M., Anton, P., & Rogers, L. Q. (2023). Relationships between Obesity, Exercise Preferences, and Related Social Cognitive Theory Variables among Breast Cancer Survivors. *Nutrients, 15*(5). <https://doi.org/10.3390/nu15051286>

- Bull, F. C., Al-Ansari, S. S., Biddle, S., Borodulin, K., Buman, M. P., Cardon, G., Carty, C., Chaput, J.-P., Chastin, S., Chou, R., Dempsey, P. C., DiPietro, L., Ekelund, U., Firth, J., Friedenreich, C. M., Garcia, L., Gichu, M., Jago, R., Katzmarzyk, P. T., Willumsen, J. F. (2020). World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *British Journal of Sports Medicine*, 54(24), 1451. <https://doi.org/10.1136/bjsports-2020-102955>
- Cameron, R. B., & Rideout, C. A. (2022). 'It's been a challenge finding new ways to learn': first-year students' perceptions of adapting to learning in a university environment. *Studies in Higher Education*, 47(3), 668-682. <https://doi.org/10.1080/03075079.2020.1783525>
- Fishbach, A., & Woolley, K. (2022). The Structure of Intrinsic Motivation. *Annual Review of Organizational Psychology and Organizational Behavior*, 9(Volume 9, 2022), 339-363. <https://doi.org/10.1146/annurev-orgpsych-012420-091122>
- Graupensperger, S., Panza, M. J., Budziszewski, R., & Evans, M. B. (2020). Growing into "Us": Trajectories of Social Identification with College Sport Teams Predict Subjective Well-Being. *Applied Psychology: Health and Well-Being*, 12(3), 787-807. <https://doi.org/10.1111/aphw.12207>
- Gupta, A., Dhiman, N., Yousaf, A., & Arora, N. (2021). Social comparison and continuance intention of smart fitness wearables: an extended expectation confirmation theory perspective. *Behaviour & Information Technology*, 40(13), 1341-1354. <https://doi.org/10.1080/0144929X.2020.1748715>
- Han, K.-T. (2021). Effects of Three Levels of Green Exercise, Physical and Social Environments, Personality Traits, Physical Activity, and Engagement with Nature on Emotions and Attention. *Sustainability*, 13(5).
- Herbert, C. (2022). Enhancing Mental Health, Well-Being and Active Lifestyles of University Students by Means of Physical Activity and Exercise Research Programs [Review]. *Frontiers in Public Health*, 10. <https://doi.org/10.3389/fpubh.2022.849093>
- Lin, X., & Kishore, R. (2021). Social media-enabled healthcare: A conceptual model of social media affordances, online social support, and health behaviors and outcomes. *Technological Forecasting and Social Change*, 166, 120574. <https://doi.org/10.1016/j.techfore.2021.120574>
- Lin, Y., & Gao, W. (2023). The effects of physical exercise on anxiety symptoms of college students: A meta-analysis [Systematic Review]. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1136900>
- Liu, J., Shang, B., Yin, Y., Yang, M., Zeng, M., Zhang, Y., & Ma, X. (2020). Analysis on Influencing Factors of Adolescents' Physical Activity from the Perspective of Social Cognitive Theory. *Environment and Social Psychology*, 5(1). <https://doi.org/10.18063/esp.v5.i1.1394>
- Mahdy, M. A. A. (2020). The Impact of COVID-19 Pandemic on the Academic Performance of Veterinary Medical Students [Original Research]. *Frontiers in Veterinary Science*, 7. <https://doi.org/10.3389/fvets.2020.594261>
- Marquez, D. X., Aguiñaga, S., Vásquez, P. M., Conroy, D. E., Erickson, K. I., Hillman, C., Stillman, C. M., Ballard, R. M., Sheppard, B. B., Petruzzello, S. J., King, A. C., & Powell, K. E. (2020). A systematic review of physical activity and quality of life and well-being. *Translational Behavioral Medicine*, 10(5), 1098-1109. <https://doi.org/10.1093/tbm/ibz198>
- McDermott, G., Brick, N. E., Shannon, S., Fitzpatrick, B., & Taggart, L. (2022). Barriers and facilitators of physical activity in adolescents with intellectual disabilities: An analysis informed by the COM-B model. *Journal of Applied Research in Intellectual Disabilities*, 35(3), 800-825. <https://doi.org/10.1111/jar.12985>
- Rajeshwari, M. (2021). Students' Perceptions of the Impact of Online Education on Health during COVID-19: A Survey Study. *International Journal of Health Sciences and Pharmacy (IJHSP)*, 5(2), 1-27. <https://doi.org/10.47992/IJHSP.2581.6411.0071>
- Rodrigues, F., Figueiredo, N., Jacinto, M., Monteiro, D., & Morouço, P. (2023). Social-Cognitive Theories to Explain Physical Activity. *Education Sciences*, 13(2).
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61, 101860. <https://doi.org/10.1016/j.cedpsych.2020.101860>
- Schunk, D. H., & DiBenedetto, M. K. (2021). Chapter Four - Self-efficacy and human motivation. In A. J. Elliot (Ed.), *Advances in Motivation Science* (Vol. 8, pp. 153-179). Elsevier. <https://doi.org/10.1016/bs.adms.2020.10.001>
- Stajkovic, A., & Sergent, K. (2019). Social cognitive theory. *Management*, 9780199846740-9780199840169. <https://doi.org/10.1093/obo/9780199846740-0169>
- Sun, S., Chen, Y., Mu, S., Jiang, B., Lin, Y., Gao, T., & Qiu, L. (2021). The Psychological Restorative Effects of Campus Environments on College Students in the Context of the COVID-19 Pandemic: A Case Study at Northwest A&F

- University, Shaanxi, China. *International Journal of Environmental Research and Public Health*, 18(16).
- Talwar, V., Castellanos, M., & Bosacki, S. (2023). Self-compassion, social cognition, and self-affect in adolescence: A longitudinal study. *Self and Identity*, 22(1), 58-76. <https://doi.org/10.1080/15298868.2022.2030400>
- von Sömmogy, J., Rueter, J., Curbach, J., Helten, J., Tittlbach, S., & Loss, J. (2020). How Does the Campus Environment Influence Everyday Physical Activity? A Photovoice Study Among Students of Two German Universities [Original Research]. *Frontiers in Public Health*, 8. <https://doi.org/10.3389/fpubh.2020.561175>
- Wachs, S., Krause, N., Wright, M. F., & Gámez-Guadix, M. (2023). Effects of the Prevention Program “HateLess. Together against Hatred” on Adolescents’ Empathy, Self-efficacy, and Countering Hate Speech. *Journal of Youth and Adolescence*, 52(6), 1115-1128. <https://doi.org/10.1007/s10964-023-01753-2>
- Wang, K., Li, Y., Zhang, T., & Luo, J. (2022). The Relationship among College Students’ Physical Exercise, Self-Efficacy, Emotional Intelligence, and Subjective Well-Being. *International Journal of Environmental Research and Public Health*, 19(18).
- Weinberg, R. S., & Gould, D. (2023). *Foundations of Sport and Exercise Psychology*. Human Kinetics.