Acta Kinesiologica 19 (2025) Supplement 1
DOI. 10.51371/issn.1840-2976.2025.19.S1.6

Original Investigation

Positive impact of practicing the sport on mood in active female during pandemic

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Purpose: The research aimed to measure mood states, state anxiety, and self-efficacy in Polish students of Physical Education during another wave of Covid-19.
Methods: Analyses involving 64 young and physically active women were conducted to determine whether their sports activity helps them cope with the next stage of the pandemic. Tools used included the Profile of Mood States (POMS), State-Trait Anxiety Inventory (STAI), Beck Depression Inventory, General Self-Efficacy Scale (GSES), and a short questionnaire on physical activity (PA).
Results: Based on the tested relationships, self-efficacy emerged as a negative predictor of depression (R^2 = .432, P < .05). Higher levels of self-efficacy were associated with greater vigour (R^2 = .508, $P \leq .01$) and lower tendencies towards anger (R^2 = -.328, $P \leq .01$), confusion (R^2 = -.412, $P \leq .01$), depression (R^2 = -.547, $P \leq .01$), fatigue (R^2 = -.383, $P \leq .01$), and tension (R^2 = -.415, $P \leq .01$). Anxiety was predominant in female students who displayed higher levels of depression (R^2 = .790, $P \leq .01$), anger (R^2 = .668, $P \leq .01$), and tension (R^2 = .832, $P \leq .01$), in contrast to those with higher self-efficacy and vigour. Additionally, the more time respondents devoted to physical activities—both in terms of duration (R^2 = .295, $P \leq .05$) and frequency (R^2 = .319, $P \leq .05$) the higher their level of vital energy (vigour).
Conclusions: The results support the assumption that practicing sport positively impacts mood. In the context of a pandemic threat, they reveal the potential to prevent depression by increasing physical activity.

Keywords: Affective states, anxiety, depression, physical activity, self-efficacy

Introduction

The coronavirus (COVID-19) pandemic has affected people and countries on a global scale. The epidemic has influenced mental health worldwide, with a high prevalence of anxiety, depression, insomnia, and post-traumatic stress disorder.[1] Furthermore, young adults may be more exposed to mental health issues than the general population.[2] A meta-analysis by Deng et al. confirmed that anxiety is higher among students during the pandemic compared to pre-pandemic levels in similar populations.[3] In addition, general well-being continued to worsen with each subsequent wave of COVID-19. The outcomes of the two-way ANOVA[4] indicated that both the wave (W1<W2<W3) and gender (men<women) had a major impact on anxiety levels. Statistically significant changes in perceived stress were found between pandemic waves (W1>W2, W1>W3) and genders (men<women). Women presented an additional anxiety risk twice as frequently as men.[5]
Self-efficacy is an important resource for coping with a pandemic, as it relates to one's belief in the ability to handle difficult circumstances.[6] This construct influences a person's behaviour in facing challenges and is tied to a sense of control over surrounding events. In the study of self-efficacy, initiating and practicing physical activity in an eight-week programme resulted in a statistically significant improvement in mental conditions regarding depression, positive affect, and self-efficacy.[7] Sports training and physical activity (PA) are key predictors of mental health problems. International research has proven that social isolation during COVID-19 was correlated with reduced PA intensity. Students who were physically inactive during the pandemic exhibited higher levels of depression and anxiety compared to the physically active group. Physical activity has become a stronger predictor of depression symptoms than anxiety in students.[8] Likewise, PA intensity had a significantly positive impact on the mood states of teenagers during COVID-19.[9] The use of PA to prevent mental health issues during the "imprisonment" is a very suitable strategy, as previous studies have found that PA not only provides long-term mental health benefits but also immediate psychological advantages for anxiety and mood due to its acute effects.[10]
There is little research on the impact of PA on the mental health of women (who are not professional athletes) in the pandemic.[11-13] Overall, the research suggested that higher physical activity is correlated with greater well-being, as well as lower anxiety, depressive symptoms, and stress, irrespective of age. Women were more vulnerable to welfare changes, and men were more susceptible to changes in physical activity.[14] The research aimed to measure mood states, state anxiety, and self-efficacy, and their correlations with physical activity in Polish students, who are future trainers of Physical Education during COVID-19. The

research aimed to measure mood states, state anxiety, and self-efficacy, and their correlations with physical activity in Polish students, who are future trainers of Physical Education during COVID-19.

Based on the concepts presented above, two hypotheses are formulated for this study: H1: Females with a higher sense of self-efficacy during the pandemic exhibit better mood (an increased state of vigour and lower levels of negative states). H2: Females who engage in more physical activity demonstrate a higher level of vigour and lower levels of state anxiety and depression.

Methods

Participants

The study group consisted of 64 female students aged 18 to 35 years (average age M=23.00; SD= 1.99) from the Faculty of Physical Education. Average sport experience was from 1 to 15 years. Inclusion criteria included enrolment in a university program, undertaking a coaching specialization, and active participation in physical activity and BMI from 18.5-24.9. Exclusion criteria were related to participants' failure to complete the study. The women trained from 1 to 15 times a week (average 6 times), for durations ranging from 30 minutes to 7 hours per session (average 104 minutes), depending on the type and intensity of the exercise. Female students were asked to reflect on their physical exercise before the pandemic and estimate whether they were currently exercising more, the same, or less than before COVID-19.

Experimental Design

An online survey was used in the study, conducted on the Survio platform (a Czech project from Brno that offers a survey system for preparing questionnaires, collecting and analyzing data, and sharing results online).[15] The study took place during the coronavirus pandemic in 2021 and was conducted by university lecturers during classes.[16]

Instruments

The survey utilized the standard psychological questionnaires: Profile of Mood States (POMS), Beck Depression Inventory (BDI-II), State-Trait Anxiety Inventory (STAI), and General Self-Efficacy Scale (GSES). Additionally, the authors created a study to determine the level of PA (physical activity) in subjects regarding changes during COVID-19. The semi-closed physical activity test included the following questions:

1. How many times a week do you practice physical activity? (Frequency)
2. How intense is the physical activity (exercise) you practice? (Intensity)
3. How long is the physical activity (exercise) you practice? (Duration)
4. Has your physical activity changed during the COVID-19 period? (Change)

The Mood Profile Questionnaire (POMS) by McNair, Lorr, and Droppleman was used to measure mood across six scales: confusion, depression, fatigue, anger, tension, and vigour. In addition to these affective state indices, a brief index of negative mood can be estimated, with Cronbach's alpha confirming the tool's psychometric validity. The psychometric results of the tool are sat-is factory for research demonstrating Cronbach's alphato be within the range of 0.74-0.91.[17] The Polish adaptation was conducted by Dudek and Koniarek.[18] The Beck Depression Inventory II is a self-report questionnaire consisting of 21 items and is a tool for measuring the severity of depression and has demonstrated internal consistency, stability, and accuracy: very high internal consistency - the Cronbach's alpha coefficient for the entire normalization sample was .91, and .93 for patients with depression.[19] The State and Trait Anxiety Inventory (original version by Spielberger and Polish adaptation by Juczyński) investigates anxiety levels and comprises two scales: one for state (situational) anxiety and another for trait anxiety per the Polish version by Wrzesniewski et al.[20-22] The psychometric indicators show a fluctuation in the internal consistency coefficients (.86 to .95), and the test-retest reliability coefficients from .65 to .75. The General Self-Efficacy Scale (GSES) measures the strength of an individual's belief in their effectiveness at coping with problematic situations and barriers, both in daily activities and isolated stressful circumstances. Cronbach's alpha for GSES meets psychometric requirements (.76 to .90).[23]

Statistical Analysis

The research was conducted using Statistica for Social Science software (SPSS Statistics for Windows, version 22.0, Armonk, NY, USA), currently owned and produced by TIBCO Software Inc.[24] The statistical methods used were Pearson correlation and multiple regression. The normal distribution of the data was verified using the Kolmogorov-Smirnov (K-S) test. The findings showed variables' significance values ranged from .58 to 2, all higher than .05, indicating normally distributed data. To ascertain the association between variables among female students enrolled in physical education, Pearson Coefficient Correlation was employed. ANOVA (Analysis of Variance) was utilized to determine how much the predictors for multiple regression reduced the residual variance. The linear model (multiple regression) was used to predict a response variable's outcome. Tables with the results of the obtained moderate quality cross-correlations are presented below, including the results of standardized psychological functions analyzed in the study (1-10) and the survey results regarding respondents' declarations of physical activity (11-14).

For each statistical test, a power analysis was performed using G*Power to confirm that the sample size (64 individuals) was enough. According to the findings, the samples needed for multiple regression analysis varied from 40 to 45, for ANOVA, from 30 to 35, and for Pearson correlation, from 30 to 40. The reliability of the results was ensured by the statistical power for all tests being at a suitable level (Power = .80, $\alpha = .05$) because the sample size employed exceeded the necessary values. Furthermore, all tests showed a large effect, according to the effect size analysis ($f^2 = .76$ for regression, $f = .8$ for ANOVA, and $r = .50$, $d = 1.15$ for correlation).

Results

Tables with the results of the obtained medium-quality cross-correlations are presented below. These include the results of the standardized psychological functions analyzed in the study (1-10) and the survey findings regarding respondents' declarations related to physical activity (11-14). Table 1 presents correlations between all the variables.

The first table shows the cross-relationships between the variables studied. Feelings of anxiety showed strong positive correlations with depression (Pearson's $R = .790$, $P < .0001$), confusion ($R = .718$, $P < .0001$), fatigue ($R = .647$, $P < .0001$), tension ($R = .832$, $P < .0001$), and anger ($R = .668$, $P < .0001$). The significance threshold is .01 ($P < .01$).

A greater level of depression was observed among subjects who also had higher levels of anger ($R= .837$, $P < .0001$), confusion ($R = .863$, $P < .0001$), fatigue ($R = .768$, $P < .0001$), and tension ($R= .858$, $P < .0001$). They also had lower levels of self-efficacy

Table 1. Coefficient correlations (Pearson) between all the variables among female physical education student

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
(1) Age		.243 (*P*=.053)	**.272*** **(*P*= .03)**	-.082 (*P*=.517)	.106 (*P*=.407)	.152 (*P*=.23)	.232 (*P*=.065)	.226 (*P*=.073)	.177 (*P*=.163)	**-.361**** **(*P*=.003**	-.074 (*P*=.563)	.020 (*P*=.874)	-.010 (*P*=.938)	-.058 (*P*=.647)
(2) STAI	.243 *(P*=.053)		**.810**** ***P*<.0001)**	**-.442**** ***P*<.0001**	**.668**** ***P*<.0001**	**.718**** ***P*<.0001**	**.790**** ***P*<.0001**	**.647**** ***P*<.0001)**	**.832**** ***P*<.0001**	**-.648**** ***P*<.0001**	-.131 (*P*=.304)	-.047 (*P*=.784)	-.107 (*P*=.399)	-.104 (*P*=.41 5)
(3)Beck	**.272*** **(*P*=.03)**	**.810**** ***P*<.0001**		**-.497**** ***P*<.0001**	**.624**** ***P*<.0001**	**.697**** ***P*<.0001**	**.775**** ***P*<.0001**	**.586**** ***P*<.0001**	**.759**** ***P*<.0001**	**-.672**** ***P*<.0001**	-.226 (P=.073)	.056 (*P*=.526)	-.109 (*P*=.39)	-.102 (*P*=.424)
(4)GSES	-.082 (*P*=.517)	**-.442**** ***P*<.0001**	**-.497**** ***P*<.0001**		**-.328**** **(*P*=.008**	**-.412**** **(*P*=.001**	**-.547**** **p<.0001**	**-.383**** **(*P*=.002)**	**-.415**** **(*P*=.001**	**.508**** ***P*<.0001**	**.326**** **(*P*= .009**	-.107 (*P*=.336)	**.292*** **(*P*= .019**	.079 (*P*=.535)
(5)Anger	.106 (*P*=.407)	**.668**** ***P*<.0001**	**.624**** ***P*<.0001)**	**-.328**** ***(P*=.008**		**.800**** ***P*<.0001**	**.837**** ***P*<.0001**	**.669**** ***P*<.0001)**	**.799**** ***P*<.0001**	**-.362**** **(*P*=.003**	-.107 (*P*=.40)	-.041 (*P*=.826)	-.060 (*P*=.639)	-.179 (*P*=.157)
(6)Confiusion	.152 (*P*=.23)	**.718**** ***P*<.0001**	**.697**** ***P*<.0001)**	**-.412**** **(*P*=.001**	**.800**** ***P*<.0001**		**.863**** ***P*<.0001**	**.757**** ***P*<.0001**	**.840**** ***P*<.0001**	**-.523**** ***P*<.0001**	-.115 (*P*=.366)	.083 (*P*=.45)	-.078 (*P*=.54)	-.028 (*P*=.827)
(7) Depression	.232 (*P*=.065)	**.790**** ***P*<.0001**	**.775**** ***P*<.0001**	**-.547**** ***P*<.0001**	**.837**** ***P*<.0001**	**.863**** ***P*<.0001**		**.768**** ***P*<.0001**	**.858**** ***P*<.0001**	**-.520**** ***P*<.0001**	-.100 (*P*=.433)	.121 (*P*=.274)	-.063 (*P*=.619)	.014 (*P*=.91)
(8) Fatique	.226 (*P*=.073)	**.647**** ***P*<.0001**	**.586**** ***P*<.0001**	**-.383**** **(*P*= .002)**	**.669**** ***P*<.0001**	**.757**** ***P*<.0001**	**.768**** ***P*<.0001**		**.782**** ***P*<.0001**	**-.492**** ***P*<.0001**	.049 (*P*=.701)	.170 (*P*=.153)	-.149 (*P*=.242)	.184 (*P*=.146)
(9) Tension	.177 (*P*=.163)	**.832**** ***P*<.0001**	**.759**** **(*P*<.0001)**	**-.415**** **(*P*= .001**	**.799**** ***P*<.0001**	**.840**** ***P*<.0001**	**.858**** ***P*<.0001**	**.782**** ***P*<.0001)**		**-.498**** ***P*<.0001**	-.170 (*P*=.179)	-.063 (*P*=.727)	-.073 (*P*=.568)	-.076 (*P*=.549)
(10) Vigour	**-.361**** **(*P*= .003)**	**-.648**** ***P*<.0001**	**-.672**** ***P*<.0001)**	**.508**** ***P*<.0001**	**-.362**** **(*P*= .003**	**-.523**** ***P*<.0001**	**-.520**** ***P*<.0001**	**-.492**** ***P* <.0001**	**-.498**** ***P*<.0001**		**.319*** **(*P*= .01)**	.083 (*P*=.584)	**.295*** **(*P*= .018**	.095 (*P*=.454)
(11) Q.1.P.E.I	-.074 (*P*=.563)	-.131 (*P*=.304)	-.226 (*P*=.073)	**.326**** **(*P*= .009**	-.107 (*P*=.40)	-.115 (*P*=.366)	-.100 (*P*=.433)	.049 (*P*=.701)	-.170 (*P*=.179)	**.319*** **(*P*= .01)**		**.276*** **(*P*= .027**	**.549**** ***P*<.0001**	.191 (*P*=.131)
(12) Q.2.P.E.I	.020 (*P*=.875)	-.047 (*P*=.712)	.056 (*P*=.661)	-.107 (*P*=.401)	-.041 (*P*=.746)	.083 (*P*=.515)	.121 (*P*=.341)	.170 (*P*=.179)	-.063 (*P*=.622)	.083 (*P*=.515)	**.276*** **(*P*= .027**		.221 (*P*=.080)	.235 (*P*=.062)
(13) Q.3.P.E.I	-.010 (*P*=.938)	-.107 (*P*=.399)	-.109 *(P*=.390)	**.292*** **(*P*= .019**	-.060 (*P*=.639)	-.078 (*P*=.540)	-.063 (*P*=.619)	-.149 (*P*=.242)	-.073 (*P*=.568)	**.295*** **(*P*= .018**	**.549**** ***P*<.0001**	.221 (*P*=.080)		.169 (*P*=.181)
(14) Q.4.P.E.I	-.058 (*P*=.647)	-.104 (*P*=.415)	-.102 (*P*=.424)	.079 (*P*=.535)	-.179 (*P*=.157)	-.028 (*P*=.827)	.014 (*P*=.910)	.184 (*P*=.146)	-.076 (*P*=.549)	.095 (*P*=.454)	.191 (*P*=.131)	.235 (*P*=.062)	.169 (*P*=.181)	

Note: STAI state anxiety; Beck: Beck Depression; GSES : general self-efficacy; . Q.1.P.E.I: How many times a week do you practice physical activity? Q.2.P.E.I: How intense is the physical activity(exercise) practiced? Q.3.P.E.I: How long is the physical activity (exercise) that you practice? Q.4.P.E.I: For you, is the physical activity practiced during the Covid period? P value*: Correlation is statistically significant ($P \leq .05$); P value**: Correlation is statistically significant ($P \leq .01$). *P* value*: Correlation is statistically significant ($P \leq .05$); *P* value**: Correlation is statistically significant ($P \leq .01$).

(*R*= -.547, *P* <.0001) and vigour (*R* = -.520, *P* < .0001). Self-efficacy positively correlated with vigour (*R* = .508, *P* < .0001) and negatively with anger (*R*= -.328, *P*= .008), confusion (*R* = -.412, *P* = .001), fatigue (*R* = -.383, *P* = .002), and tension (*R*= -.415, *P* = .001). The significance threshold is .01 (*P* < .01). Negative aspects of mood, such as anger, tension, fatigue, and confusion, demonstrated strong positive mutual correlations. A higher degree of vigour (*R*= .319, *P*= .01) and self-efficacy (*R*= .326, *P*= .009) was found in subjects who showed more frequent participation in physical activity and exercised longer, with self-efficacy (*R*= .292, *P*= .019) and vigour (*R* = .295, *P* = .018) levels being higher than those of others. The significance threshold is .05 (*P* < .05).

The Analysis of Variance (ANOVA) results, used to evaluate the overall significance of the regression model predicting General Self-Efficacy (GSES) using various psychological factors such as Beck's depression scale, anxiety (STAI), and mood states (anger, confusion, depression, fatigue, tension, and vigour), are shown in Table 2.

The Total Sum of Squares (SS_total) is 1487.484, and the Regression Sum of Squares (SS_regression) is 642.545, indicating that the independent variables together account for a portion of the variance in GSES. The unexplained variation is represented by the Residual Sum of Squares (SS_residual), which is 844.939. The model's *F*-value is 5.228, with a corresponding *P*-value < .001, which is considered highly significant (*P* < .05). This means that the regression model significantly explains the variance in self-efficacy, suggesting that at least one of the predictor variables contributes meaningfully to the prediction of GSES.

The findings of a multiple regression analysis examining the association between female physical education students' General Self-Efficacy (GSES) and psychological variables such as mood states (POMS), state anxiety (STAI), and depression (Beck Depression Scale) are shown in Table 3. These psychological factors are important predictors of self-efficacy levels, as the model explains 43.2% (R^2 = .432, *P* < .001) of the variance in self-efficacy. The statistical significance of the entire model is confirmed by the F-statistic (*F* = 5.228, *P* < .001). Among the independent variables, self-efficacy and vigour (β = .367, *P* = .020) have a significant positive connection, indicating that self-efficacy is positively correlated with vigour levels. On the other hand, depression shows a substantial negative correlation (β = -.958, *P* = .001), suggesting that lower self-efficacy is predicted by higher depressive symptoms. Additional factors like rage, bewilderment, exhaustion, stress, and anxiety, along with Beck's depression scale, do not show statistically significant relationships with self-efficacy (*P*>.05). Furthermore, all predictors' variance inflation factor (VIF) values fall below the generally recognized cutoff point of 5, indicating that multicollinearity is not a significant issue in the model. This supports the validity of the results and emphasizes how important depression and vigour are in affecting participants' self-efficacy.

Table 2. The result of ANOVA for regression model (GSES, POMS, STAI and Beck depression)

Model	Variables	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	642.545	8	80.32	5.228	< .001
	Residual	844.939	55	15.36		
	Total	1487.484	63			

a. Dependent Variable: GSES (general self-efficacy)

b. Predictors: (Constant), anger, confusion, depression fatigue, tension, vigour, STAI (state anxiety), Beck(beck depression).

Df: degree of freedom; F: f-test; Sig.: significative. P value : (P < .05) is highly significant.

Table 3. Results of multiple regressions by GSES, POMS, STAI and Beck depression among females physical education student

Variables	R^2	F	B	Std. Error	Beta	T	Sig	Tolerance	VIF
Constant			23.024	4.670		4.930	<.001		
Anger			.144	.102	.287	1.407	.165	.320	3.004
Confusion			.195	.214	.212	.914	.364	.291	3.437
Depression			-.336	.098	-.958	-3.438	.001	.520	1.969
Fatigue	.432	5.228	.079	.142	.100	.552	.583	.294	3.399
Tension			-.025	.148	-.046	-.166	.869	.420	2.085
Vigour			.313	.131	.367	2.389	.020	.347	2.883
STAI			.080	.091	.200	.885	.380	.610	1.639
Beck			-.011	.109	-.021	-.103	.918	.334	3.297

STAI: state anxiety; Beck: Beck Depression; GSES: general self-efficacy; POMS: Anger, Confusion, Depression, Fatigue; R2: R-squared; F : f-test; B & Std Error: unstandardized coefficients; Beta: standardized coefficients: *t*-test; Sig: significative; VIF: Variance Inflation Factor. *P* value : (*P* < .05) is significant

Discussion

The purpose of the study was to measure mood states, state anxiety, and self-efficacy, and their correlations with physical activity in Polish students, who are future trainers of Physical Education during COVID-19. The COVID-19 pandemic significantly affected the mood of athletes. Research on boxers revealed a notable increase in the intensity of negative emotions, such as anger, confusion, depression, fatigue, and tension, along with a decline in vigour during this period. Studies conducted during the pandemic indicated that self-efficacy played a mediating role in the relationship between positive emotions and symptoms of anxiety and depression.[25]

At the same time, research conducted during the pandemic on self-efficacy mediated the relationships between positivity and anxiety and depressive symptoms. [26] Research has shown that higher levels of self-efficacy are associated with greater vigour, and these individuals are less prone to anger, confusion, depression, fatigue, and tension. This confirms the first hypothesis, which assumes a more optimal mood in people with a higher sense of self-efficacy. Generally, the outcomes of our research verify the role that self-efficacy beliefs play in enabling individuals to adjust their emotions and benefit from their emotional experiences. Additionally, our findings support previous results regarding self-efficacy beliefs and their relation to an individual's capability to express helpful emotions, recall memories of positive emotional experiences, and use humour. Self-efficacy and self-control were negatively correlated with depression, and self-efficacy was positively correlated with self-control.[27] In other research on women's well-being, authors note the importance and necessity of the positive psychological properties of women in the context of their health.[28]

Physical activity is associated with an antidepressant effect in clinical depression.[29-30] In this study, subjects demonstrated higher degrees of vigour and self-efficacy with more frequent participation in physical activity and longer exercise durations compared to others. Thus, the second hypothesis, which assumes positive states associated with higher physical activity, was confirmed. In the paper by Stewart et al., self-efficacy and several mood dimensions were related. The figures suggest that changes in mood may be mediated by changes in perceived abilities.[31]

Anxiety was prevalent among future trainers with higher levels of depression, anger, and tension, as opposed to those with higher self-efficacy and vigour. Anxiety disorders are the most common mental health disorders. In the study by Tahmassian and Jalali Moghadam, negative relationships were found between total self-efficacy, physical self-efficacy, emotional self-efficacy, and anxiety.[32] According to Sanchez-Hucles and Winstead, there is a significant gender disparity in the incidence of anxiety, with a higher ratio of lifetime anxiety diagnoses in women than in men.[33] Concurrently, the more time respondents devoted to sport—characterized by both the duration and frequency of exercise—the higher the level of vital energy (vigour) they displayed. Vigour is a desirable affective state, treated as an indicator of mental well-being that favors higher athletic results. Maintaining mental well-being, including an optimal level of vigour, is especially important during the COVID-19 pandemic, when mood depression is commonly noted.[34] Gil-Beltrán's study shows that subjects who exercise more have higher levels of vigour in physical exercise, positively associated with high levels of well-being at work.[35]

The results confirm the supposition about the positive influence of practicing sport on mood. In the context of a pandemic threat, they suggest the possibility of preventing depression through increased sport training. The data suggest that being in lockdown due to a pandemic might incur negative physical and mental health-related costs, and engaging in physical activity may mitigate these adverse consequences during lockdowns and quarantines.[36] The Guszkowska study confirms the acute effect of exercise, showing reductions in anxiety and depression after single exercise sessions.[37] There was no consensus on the ideal physical activity intensity for mitigating harmful mental symptoms, neither for frequency nor for the type of sport. Physical exercises were an excellent and effective choice in mitigating the negative effects of the COVID-19 pandemic on mental health during its first year.[10]

Anxiety and depressive symptoms were found to increase as the pandemic continued. As the COVID-19 pandemic progressed, negative mental health symptoms rose among Poles. Women, singles, and people with previous psychiatric treatment were more likely to develop the above-mentioned symptoms.[38] The main drawbacks of the study are the small research group, cross-sectional study, and no follow-up measurements in the future.

Practical Applications

The procedures of these studies may indicate how to proceed with athletes and coaches during crises, such as the successive waves of the pandemic. For people involved in sports, it is important to continue enjoying physical activity even in very difficult circumstances. This approach may lead to better psychological well-being, particularly for women.

Based on the observations and findings above, consider the following practical applications:

1. Engage in sports regardless of the circumstances.
2. Prioritize your mental fitness by keeping the intensity of your sports activities high.
3. If you are a woman, recognize that you have unique needs when it comes to maintaining emotional well-being.

It is interesting to explore what motivates people to engage in increased physical activity, especially when it comes to encouraging women to be more active. The next step should involve studying the emotional factors influencing this behavior among a similar group of participants who have been affected by the COVID-19 pandemic. Will their mood be more positive?

Conclusions

Studies have shown that self-efficacy encourages individuals to engage in more frequent physical activity. Respondents also reported that they exercised longer than other women. This may indicate that women with a higher sense of self-efficacy coped better in difficult situations, such as the threat of a pandemic, by exercising more frequently and for longer durations. Self-efficacy was a positive predictor of vigour, which promotes greater life energy and an overall positive attitude towards the world. Women with higher levels of self-efficacy were less likely to experience depression during the study. Each day presents a new opportunity to engage in physical activity and exercise, which can provide both short- and long-term benefits for mood. Consistency and sustained motivation may be enhanced by peer support, family support, or electronic platforms offering exercise programs.

Acknowledgments

The authors would like to thank the future female coaches for their cooperation during the study.

Informed Consent Statement

Informed consent was signed by all participants.

Ethical Committee approval

Senate Ethics Committee of Scientific Research at the University of Physical Education in Warsaw SKE01-49/2021

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Topic

Sport Science, Sport Psychology

Conflicts of interest

The authors have no conflicts of interest to declare.

Funding

No funding was received for this investigation.

Author-s contribution

Conceptualization, M.B.W., A.S.; methodology, M.B.W, A.S.;; software, M.K.; validation, M.K.; formal analysis, M.K.; investigation, M.B.W, A.S.; and M.K.; resources, M.B.W, A.S.;; data curation, M.K., M.B.W. and A.S.; writing, M.B.W, A.S.;; review and editing, A.S.; M.B.W.; visualization, M.B.W.; supervision, M.B.W, A.S.; and M.K.; project administration, M.B.W., A.S. All authors have read and agreed to the published version of the manuscript.

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Received: 15.02.2025.
Accepted: 07.04.2025.
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