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The Mediating Role of Psychological Distress & Flexibility in Connecting Physical Activity, Physical Appearance and Life Satisfaction

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ABSTRACT

This study examines the complex relationships between physical activity, physical appearance, and life satisfaction, with particular focus upon the mediating roles of psychological flexibility and psychological distress. In this linking, drawing on theories of well-being, self-perception, and mental health, the research aims to determine that how psychological factors influence the pathways linking physical and appearance-related attributes to subjective well-being. The data were collected through the structured survey administered to diverse sample, thus capturing participants' physical activity, self-perceived physical appearance, psychological flexibility, psychological distress, and life satisfaction. Statistical analyses, including mediation modeling, were employed to examine direct and indirect effects. The findings reveal that while physical activity and a positive physical appearance directly contribute to greater life satisfaction, these relationships are influenced significantly by facilitators in linking the predicting and criterion variables of study in order to extract innovative information that may help in contributing the existing knowledge. The results provide significant information in reaching the conclusion and making the decision about the hypotheses. The psychological distress emerged

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as a negative mediator, weakening the positive effects of physical activity and physical appearance on life satisfaction. In contrast, psychological flexibility acted as a positive mediator, enabling individuals to derive greater life satisfaction from their physical attributes and activities by fostering resilience and adaptability in the face of challenges. The dual mediation model underscores the importance of addressing protective and risk psychological factors when promoting well-being. This study contributes to the literature by integrating physical, psychological, and perceptual elements into the unified model of life satisfaction, offering valuable insights for mental health professionals, educators, fitness practitioners, and policymakers in designing holistic interventions that promote both physical health and psychological resilience. Thus, some recommendations have been offered as extracted from findings to policy-makers and future research to revisit these variables from different perspectives.

Keywords: Physical Activity, Psychological Distress, Flexibility Physical Appearance, and Life Satisfaction, Mediation, Students

INTRODUCTION

The links amid physical activity, physical appearance, and life satisfaction are well-documented in existing literature as regular engagement in the physical activity can positively influence one's perception of their physical appearance, which in turn can enhance overall life satisfaction from different dimension [1]. The regular physical activity is linked with improved physical image and self-perception and this improvement is due to physical changes resulting from exercise and the psychological benefits, like reduced worries and increased self-esteem [2]. The exercise is shown to decrease body dissatisfaction, that is a critical component of positive body image. This effect is experiential across various types of physical activities, including both resistance and aerobic training [3]. A positive image can enhance confidence and self-esteem, contributing to overall life satisfaction as individuals who are satisfied with their physical appearance tend to report higher happiness and satisfaction.

The satisfaction with physical appearance also can affect social acceptance and relationships, further influencing life satisfaction as positive perception of one's body

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can lead toward stronger personal relationships and better social interactions [4]. Ther regular physical activity is linked with many mental health benefits, including reduced indications of the anxiety and depression, enhanced cognitive function and improved mood, contribute to overall life satisfaction [5]. Thus, engaging in regular exercise improves quality of life by enhancing physical health, which directly impacts life satisfaction as active individuals often report higher levels of well-being and overall life satisfaction [6]. The interplay amid physical appearance, physical activity, life satisfaction suggests synergistic relationship were engaging in regular exercise boosts self-esteem and life satisfaction, supported by several studies that emphasize standing of maintaining active lifestyle for overall well-being.

The inclusive review of literature shows that physical activity leads towards improved physical appearance that enhances self-esteem and life satisfaction as positive feedback circle highlights the interconnectedness of these determining factors towards the attainment of desired leading outcomes [7]. The impact of physical activity upon psychological distress and life satisfaction is significant area of study, often highlighting positive correlations and beneficial effects as regular physical activity is linked to improved life satisfaction and well-being [8]. The engagement in the physical activity releases endorphins, that can elevate disposition and reduce feelings of anxiety and stress [9]. Thus, the group physical activities can enhance perceived social support and social connections, contributing to higher life satisfaction. Thus, achieving fitness goals over physical activity boost perceived competence and self-esteem, leading to greater life satisfaction from different perspectives.

Similarly, maintaining consistent physical activity regimen is linked with sustained perfections in life satisfaction over time. The physical activity acts as the natural stress reliever by reducing stress and promoting relaxation as regular exercise is shown to alleviate symptoms of depression anxiety, thereby reducing psychological distress [10]. Thus, improved cognitive function and resilience to stress are observed in individuals who participate in physical activities as physical activity can expand sleep patterns, which in turn can reduce feelings of psychological distress [11]. Similarly, activities combine to physical movement with mindfulness,

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are mainly effective in managing psychological distress. The sense of mastery, success and distraction from the negative thoughts during physical activities can alleviate psychological distress [12]. The participations in the group activities fosters social support networks, which buffer against stress and enhance psychological resilience.

Thus, inspiring regular physical activity as public health initiatives and part of daily routines can reduce psychological distress and improve population-level well-being as combining physical activity with psychological and cognitive-behavioral therapy can boost the treatment outcomes for individual experiencing distress [13]. Thus, tailoring physical activities program to individual preferences and needs can optimize mental health paybacks. The relationship between physical activity, life satisfaction, and psychological distress underlines the importance of uniting regular exercise into daily life for enhancing overall well-being [14]. Understanding these dynamics can inform interventions aimed at promoting the mental health and improving quality of life across diverse populations [15]. The impact of physical activity upon physical appearance, flexibility, and life satisfaction is multifaceted, influencing both physical and psychological aspects of the well-being and success.

LITERATURE REVIEW

The linkages among psychological distress, psychological flexibility, physical activity, physical appearance, and life satisfaction are complex and interrelated. The psychological distress such as depression and anxiety, can hinder psychological flexibility, skill to adapt to stressors, regulate emotions and maintain behavioral constancy [4]. The high distress levels may reduce flexibility, making it harder to engage in adaptive behaviors and cope efficiently with challenges. Thus, the psychological flexibility supports inspiration for physical activity by helping individuals to set and pursue expressive goals despite barriers [10]. The flexibility allows for adaptive responses to changes in physical activity procedures, enhancing persistence and resilience in achieving fitness goals [12]. The regular physical activity influences physical appearance, contributing toward the insight of physical appearance, enhance self-esteem and positive image, impacting satisfaction with

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physical appearance.

The positive insights of physical appearance are associated with higher levels of life satisfaction, influencing happiness and well-being as confidence in physical appearance may improve social relationships and interactions, contributing toward life satisfaction [21]. The high psychological distress is typically linked with lower life satisfaction, as distress can impair the emotional well-being and overall quality of life. The psychological flexibility may mitigate the negative effects of distress on life satisfaction by promoting adaptive coping strategies and emotional resilience [24]. The influences how individuals respond and perceive to changes in physical appearance, thereby affecting life satisfaction outcomes. These factors not operate in isolation but interact vigorously as understanding interconnectedness requires considering both direct and mediated pathways in models of health and well-being [32], and study is likely to offer suitable valuable information to literature.

The mediating role of psychological flexibility and psychological distress in connecting physical activity, physical appearance, and life satisfaction highlights interplay amid physical, perceptual and psychological factors in determining overall well-being [4]. Likewise, a positive perception of physical appearance can boost self-esteem and contribute to greater life satisfaction. Physical activity is recognized widely as contributor to improved self-image, psychological health, and satisfaction with life [7]. Still, these relationships are not always direct; they can be significantly shaped by the presence of psychological mediators [9]. On other hand, psychological flexibility the ability to regulate emotions, adapt to challenges, and remain committed to personal values despite difficulties strengthens these positive links by enabling individuals to use their physical capabilities and appearance as sources of the fulfillment and confidence rather than as points of insecurity towards outcomes.

The psychological distress, categorized by symptoms such as depression, anxiety, and stress, can weaken the positive effects of favorable body image, and physical activity as high distress levels often reduce motivation, hinder emotional regulation, and diminish one's ability to enjoy the social and physical activities [12]. This mediating mechanism underscores the need for holistic approaches that

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combine health physical promotion with strategies to reduce the psychological distress and develop adaptive coping skills [15]. When flexibility is enhanced and distress is minimized, physical activity and body image effectively translate into higher life satisfaction [17]. In the context of wellness and health programs, integrating the mental health interventions with physical activity initiatives can yield greater developments in life satisfaction than focusing on the physical outcomes alone, ultimately fostering both psychological resilience and physical vitality for successes.

The physical activity is associated widely with improved mood, enhanced physical health, and better body image, can contribute to greater life satisfaction. The relations among psychological distress, psychological flexibility, physical appearance, physical activity, and life satisfaction are complex and interconnected, reflecting the multidimensional nature of well-being [20]. Regular engagement in exercise reduces stress hormones, promotes the release of endorphins, and fosters a sense of accomplishment, can buffer against psychological distress [22]. A positive body image enhances overall happiness, whereas dissatisfaction with appearance can increase vulnerability to psychological distress and reduce perception of their physical appearance plays a crucial role in shaping the self-esteem, social confidence and emotional stability [25]. The psychological distress, encircling anxiety, depression and weakening positive effects of physical activity and favorable body image.

Conversely, the psychological flexibility functions as a protective factor, enabling individuals to cope with negative emotions, adapt to changing circumstances, and maintain the values-driven lifestyle despite setbacks [27]. The high distress levels may reduce incentive to exercise, distort self-perception, and hinder ability to derive satisfaction from physical achievements. Flexibility allows people to remain committed to healthy habits like exercise, even during stressful times, and to interpret their physical appearance more positively, sustaining higher life satisfaction [28]. In essence, the psychological factors serve as critical mediators that can either facilitate or hinder translation of physical health and appearance into overall well-being [29]. The interplay between these variables suggests that

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physical activity and positive body image contribute to life satisfaction most effectively when psychological distress is low and psychological flexibility is high for success.

The linkages among psychological distress, physical activity, psychological flexibility, physical appearance, and life satisfaction form dynamic network in which psychological and physical dimensions interact to shape well-being [12]. This holistic perspective highlights the importance of integrating psychological health support with the physical wellness initiatives, ensuring that improvements in appearance and physical activity are reinforced by emotional resilience and adaptability, ultimately leading to a more fulfilling and satisfying life [15]. When individuals perceive their appearance positively, they are more likely to feel satisfied and socially confident with their lives. Thus, the physical activity is often a key driver in this network, influencing both physical appearance and psychological circumstances [17]. The regular exercise tends to improve body composition, physical fitness, and self-perception of attractiveness, which enhances body image and self-esteem.

The psychological distress, including symptoms of anxiety, stress, and depression, can weaken the positive influence of physical activity on physique image and life satisfaction. However, this pathway is not purely physical; psychological factors mediate significantly and moderate the effects [20]. In this drive, high distress levels may distort the self-perception, making individuals less appreciative of physical improvements achieved through exercise [24]. On the other hand, psychological flexibility, the ability to adapt to challenges, remain open to the experiences, and maintain behavior aligned with personal values can enhance the benefits of physical activity and buffer against the harmful effects of distress [27]. It can also reduce the motivation and energy to engage in consistent physical activity, thereby indirectly affecting both physical appearance and overall life satisfaction. Physical appearance often acts as an intermediate link between physical activity and life satisfaction.

The improvements in physique image resulting from the consistent exercise can directly boost emotional well-being and indirectly reduce psychological distress by

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increasing self-confidence and reducing feelings of inadequacy [14]. The individuals with high psychological flexibility are better equipped to maintain exercise routines even physical appearance positively, and sustain satisfaction in life despite setbacks [20]. This interconnected model shows that physical activity enhances physical appearance, which in turn contributes to life satisfaction, but the strength and stability of this pathway psychological flexibility [25]. When combined with psychological flexibility, these effects become stronger, as flexible individuals are more resilient to negative views about appearance and capable. Ultimately, variables form interdependent system where psychological health need for the integrated interventions that address both body and mind to optimize life satisfaction.

RESEARCH METHODOLOGY

This study is quantitative in nature that aims to examine relationship in chasing the hypotheses and reaching conclusion. The positivism approach was used to chasing relationships among research variables (physical activity, life satisfaction, and motivation) of study. The research approach specifies the way through which data is collected from the respondents by retrieving them to reach their answers about variables of research in order to reach required conclusion through justification towards desired outcomes. The population of interest in this research is students hailing from colleges in Punjab, Pakistan wherein 2890 students from colleges wherein a sample is drawn from population (331), has been extracted by using the sampling formula widely used in the social research studies. Thus, 331 questionnaires were distributed among which 327 were recollected and used for analysis. Similarly, the random simple technique was used to access the population of study which comes under the non-probability technique to ensure required data from diverse dimensions. Also, both secondary and primary data were used to collect data from respondents and from existing knowledge databased to analyze data to reach conclusion. The questionnaires were adopted from previous studies. Similarly, 5-point Likert scale was used to record responses of respondents about research issues in particular context to access respondents and achieving desired outcomes.

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RESULTS OF STUDY

Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	SD
Physical Activity	336	1.30	4.80	3.1856	.75699
Psychological Flexibility	336	1.70	4.70	3.3271	.67365
Psychological Distress	336	1.30	4.30	3.7920	.77869
Physical Appearance	336	1.60	4.60	3.3813	.66824
Life Satisfaction	336	1.63	4.70	3.3234	.61450
Valid N (listwise)	336				

The descriptive statistics is used to organize, summarize, and present data in the meaningful manner so that basic characteristics and patterns can be easily understood. It involves measures such as mean, standard deviation, variance, minimum and maximum response rates. In research, descriptive statistics is vital for measuring variables because it offers clear snapshot of dataset before moving on to complex analyses. By offering the concise summary, it allows researchers to compare groups, detect relationships, and ensure data meets assumptions required for further statistical testing. In current results, all the variables have shown significant outcomes with the satisfactory outcomes.

H1: There is positive association amid physical activity, psychological distress, psychological flexibility, physical appearance & life satisfaction (H1).

Correlations Analysis

Correlations

		[1]	[2]	[3]	[4]	[5]
Physical Activity [1]	Pearson Correlation	1	.494**	-.135*	.512**	.677**
	Sig. (2-tailed)		.000	.013	.000	.000
	N	336	336	336	336	336
Psychological	Pearson	.494**	1	-	.448**	.530**

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Flexibility	Correlation			.170**		
[2]	Sig. (2-tailed)	.000		.002	.000	.000
	N	336	336	336	336	336
Psychological	Pearson	-.135*	-	1	-.201**	-.072
Distress [3]	Correlation		.170**			
	Sig. (2-tailed)	.013	.002		.000	.186
	N	336	336	336	336	336
Physical	Pearson	.512**	.448**	-	1	.558**
Appearance	Correlation			.201**		
[4]	Sig. (2-tailed)	.000	.000	.000		.000
	N	336	336	336	336	336
Life	Pearson	.677**	.530**	-.072	.558**	1
Satisfaction	Correlation					
[5]	Sig. (2-tailed)	.000	.000	.186	.000	
	N	336	336	336	336	336

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

The correlation procedure was used in this study to examine the association among the physical activity, psychological distress, psychological flexibility, physical appearance and life satisfaction with respect to strength and direction in relationship as assumed to extract information about the desired relationships. The results of correlation confirmed the association amid the research variables like physical activity and physical appearance (R = .512 & P = .000), physical activity and life satisfaction (R = .677 & P = .000), physical activity and psychological distress (R = -.135 & P = .013), physical activity and psychological flexibility (R = .494 & P = .000), and physical appearance and life satisfaction (R = .558 & P = .000), and thus hypothesis was accepted from correlation outcomes.

H2: There is a significant impact of the physical activity, psychological distress, psychological flexibility, on physical appearance (H2).

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Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	SEE
1	.569[a]	.324	.318	.55184

Regression Analysis

ANOVA

Model		SS	df	MS	F	Sig.
1	Regression	48.491	3	16.164	53.079	.000[b]
	Residual	101.102	332	.305		
	Total	149.593	335			

Regression Analysis

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.872	.242		7.722	.000
	Physical Activity	.333	.046	.377	7.256	.000
	Psychological Flexibility	.241	.052	.243	4.655	.000
	Psychological Distress	-.093	.039	-.109	-2.374	.018

A. Predictors: Physical Activity, Psychological Distress, Psychological Flexibility

B. Dependent Variable: Physical Appearance

The regression procedure was used to examine the prediction of physical appearance through physical activity, psychological distress, and psychological flexibility that was hypothesized in the study from the theoretical framework. The results of regression revealed that there is 32.4% variation in the physical appearance is due to the physical activity, psychological distress, and psychological flexibility. The results of study further confirmed the role of individual variables in predicting physical

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appearance like physical activity (β = .333 & P-value = .000), psychological distress (β = -.093 & P-value = .018), and psychological flexibility (β = .241 & P-value = .000), and hypothesis was accepted.

H3: There is a significant impact of the physical activity, psychological distress, psychological flexibility, on life satisfaction (H3).

Regression Analysis

Model Summary

Model	R	R Square	Adjusted R Square	SEE
1	.715[a]	.511	.507	.43159

Regression Analysis

ANOVA

Model		SS	df	MS	F	Sig.
1	Regression	64.657	3	21.552	115.708	.000[b]
	Residual	61.841	332	.186		
	Total	126.498	335			

Regression Analysis

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.948	.190		5.002	.000
	Physical Activity	.448	.036	.552	12.489	.000
	Psychological Flexibility	.242	.041	.265	5.971	.000
	Psychological Distress	.037	.031	.047	1.213	.226

A. Predictors: Physical Activity, Psychological Distress, Psychological Flexibility

B. Dependent Variable: Life Satisfaction

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The regression procedure was used to examine prediction of life satisfaction through physical activity, psychological distress, and psychological flexibility that was hypothesized in the study from the theoretical framework. The results of regression revealed that there is 51.1% variation in the physical appearance is due to the physical activity, psychological distress, and psychological flexibility. The results of study further confirmed the role of individual variables in predicting physical appearance like physical activity (β = .448 & P-value = .000), psychological distress (β = .037 & P-value = .226), and psychological flexibility (β = .242 & P-value = .000), and hypothesis was accepted from results.

H4: There is significant mediating role of psychological flexibility in linking physical activity and physical appearance (H4).

First Mediation Steps (a)

Mediation Analysis (Model Summary)

R	R-square	MSE	F	df1	df2	p
.4941	.2441	.3441	132.2348	1.0000	334.0000	.0000

Mediation Analysis (Coefficient)

Model	Coefficient	se	t	p	LLCI	ULCI
Constant	1.9265	.1201	16.0376	.0000	1.6902	2.1628
Physical Activity	.4397	.0382	11.4993	.0000	.3645	.5149

Predicting Variable: Physical Activity

Criterion Variable: Psychological Flexibility

Second & Third Mediation Steps (b & ć)

Mediation Analysis (Model Summary)

R	R-square	MSE	F	df1	df2	p
.5592	.3127	.3088	69.0387	2.0000	333.0000	.0000

Mediation Analysis (Coefficient)

Model	Coefficient	se	t	p	LLCI	ULCI
Constant	1.4477	.1644	8.8043	.0000	1.1242	1.7711
Psychological	.2561	.0600	4.2677	.0000	.1381	.3742

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Flexibility						
Physical Activity	.3395	.0572	5.9301	.0000	.2269	.4521

Predicting Variable: Physical Activity & Psychological Flexibility

Criterion Variable: Physical Appearance

Fourth Mediation Step (c)

Mediation Analysis (Model Summary)

R	R-square	MSE	F	df1	df2	p
.5121	.2623	.3304	92.3456	1.0000	334.0000	.0000

Mediation Analysis (Coefficient)

Model	Coefficient	se	t	p	LLCI	ULCI
Constant	1.9411	.1438	13.4953	.0000	1.6582	2.2241
Physical Activity	.4521	.0470	9.6097	.0000	.3596	.5446

Independent Variable: Physical Activity

Dependent Variable: Physical Appearance

The mediation procedure was used to examine the mediating role of psychological flexibility in linking physical activity and physical appearance by using the information obtained from all the four paths of mediation in order to determine the direct and indirect relationships among the research variables to reach the conclusion that whether it is partial mediation or full mediation. The results of current mediation outcomes confirmed that psychological flexibility thus partially mediated the connection between physical activity and physical appearance due to decrease in coefficient value from (.4521) in direct relationship to (.3395) in the indirect relationship and thus hypothesis about mediation is thus partially accepted from the mediation outcomes in the current research study.

H5: There is significant mediating role of psychological flexibility in linking physical activity and life satisfaction (H5).

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First Mediation Steps (a)

Mediation Analysis (Model Summary)

R	R-square	MSE	F	df1	df2	p
.4941	.2441	.3441	132.2348	1.0000	334.0000	.0000

Mediation Analysis (Coefficient)

Model	Coefficient	se	t	p	LLCI	ULCI
Constant	1.9265	.1201	16.0376	.0000	1.6902	2.1628
Physical Activity	.4397	.0382	11.4993	.0000	.3645	.5149

Predicting Variable: Physical Activity

Criterion Variable: Psychological Flexibility

Second & Third Mediation Steps (b & ć)

Mediation Analysis (Model Summary)

R	R-square	MSE	F	df1	df2	p
.7134	.5090	.1865	192.7467	2.0000	333.0000	.0000

Mediation Analysis (Coefficient)

Model	Coefficient	se	t	p	LLCI	ULCI
Constant	1.1177	.1192	9.3771	.0000	.8832	1.3521
Psychological Flexibility	.2362	.0420	5.6281	.0000	.1537	.3188
Physical Activity	.4457	.0369	12.0923	.0000	.3732	.5182

Predicting Variable: Physical Activity & Psychological Flexibility

Criterion Variable: Life Satisfaction

Fourth Mediation Step (c)

Mediation Analysis (Model Summary)

R	R-square	MSE	F	df1	df2	p
.6770	.4583	.2052	322.1215	1.0000	334.0000	.0000

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Mediation Analysis (Coefficient)

Model	Coefficient	se	t	p	LLCI	ULCI
Constant	1.5728	.1010	15.5771	.0000	1.3742	1.7714
Physical Activity	.5495	.0306	17.9477	.0000	.4893	.6098

Independent Variable: Physical Activity

Dependent Variable: Life Satisfaction

The mediation procedure was used to examine the mediating role of psychological flexibility in linking physical activity and life satisfaction by using the information obtained from all the four paths of mediation in order to determine the direct and indirect relationships among research variables to reach desired conclusion that whether it is partial mediation or full mediation. The results of the current mediation outcomes confirmed that psychological flexibility thus partially mediated the connection between physical activity and life satisfaction due to decrease in the coefficient value from (.5495) in direct relationship to (.4457) in the indirect relationship and thus hypothesis about mediation is thus partially accepted from the mediation outcomes in the current research study.

DISCUSSION

The satisfaction with physical appearance also can affect social acceptance and relationships, further influencing life satisfaction as positive perception of one's body can lead toward stronger personal relationships and better social interactions [4]. Ther regular physical activity is linked with many mental health benefits, including reduced indications of the anxiety and depression, enhanced cognitive function and improved mood, contribute to overall life satisfaction [5]. Thus, engaging in regular exercise improves quality of life by enhancing physical health, which directly impacts life satisfaction as active individuals often report higher levels of well-being and overall life satisfaction [36]. The interplay amid physical appearance, physical activity, life satisfaction suggests synergistic relationship were engaging in regular exercise boosts self-esteem and life satisfaction, supported by several studies that emphasize standing of maintaining active lifestyle for overall well-being.

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The regular physical activities, especially strength training and exercises, can lead to advances in physique composition, including reduced build overweight and bigger muscle mass as physical activity promotes better circulations that can enhance skin health and appearances [16]. Thus, exercises that improve posture and body alignment contribute to more confident and attractive physical presence as individuals see themselves as more confident and attractive when engaging in systematic physical activity [17]. Activities like stretching, and Pilates can improve flexibility, enhancing range of motion and falling muscle stiffness as flexible muscles and joints are less prone to injury during the physical activities and daily tasks [18]. Thus, the enhanced flexibility supports better functional movement patterns, contributing to overall physical competence and performance as exercise stimulates the release of endorphins and serotonin, improving mood & emotional well-being.

The psychological distress can impair the performance, affect motivation, and lead to decreased overall satisfaction with sporting experiences as athletes' satisfaction in sports can stem from achievement of goal line, skill development, team camaraderie, and personal development [28]. The high levels of life satisfaction in sports are linked with sense of success, positive emotions, and enhanced self-esteem as higher levels of psychological distress typically correlate with lower life satisfaction among athletes [29]. The social support, coping strategies, resilience play roles in mitigating the negative impact of distress on satisfaction as chronic distress can lead to long-term decreases in satisfaction and contribute to burnout [30]. Thus, providing students with the access to counseling services, mental health resources, and stress management techniques can mitigate distress and enhance satisfaction, emphasizing intrinsic motivation, and can promote satisfaction and well-being.

The mediating role of psychological flexibility and psychological distress in connecting physical activity, physical appearance, and life satisfaction highlights interplay amid physical, perceptual and psychological factors in determining overall well-being [4]. Likewise, a positive perception of physical appearance can boost self-esteem and contribute to greater life satisfaction. Physical activity is recognized widely as contributor to improved self-image, psychological health, and satisfaction

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with life [7]. Still, these relationships are not always direct; they can be significantly shaped by the presence of psychological mediators [9]. On other hand, psychological flexibility the ability to regulate emotions, adapt to challenges, and remain committed to personal values despite difficulties strengthens these positive links by enabling individuals to use their physical capabilities and appearance as sources of the fulfillment and confidence rather than as points of insecurity towards outcomes.

The improvements in physique image resulting from the consistent exercise can directly boost emotional well-being and indirectly reduce psychological distress by increasing self-confidence and reducing feelings of inadequacy [14]. The individuals with high psychological flexibility are better equipped to maintain exercise routines even physical appearance positively, and sustain satisfaction in life despite setbacks [20]. This interconnected model shows that physical activity enhances physical appearance, which in turn contributes to life satisfaction, but the strength and stability of this pathway psychological flexibility [25]. When combined with psychological flexibility, these effects become stronger, as flexible individuals are more resilient to negative views about appearance and capable. Ultimately, variables form interdependent system where psychological health need for the integrated interventions that address both body and mind to optimize life satisfaction.

RECOMMENDATIONS

1. There is a need to develop interventions aimed at reducing psychological distress through counseling, mindfulness, and regulation strategies to enhance positive effects of physical and appearance-related factors.
2. To promote regular physical activity programs that not only improve physical and health appearance but integrate also psychological resilience and stress management training for the better required outcomes.
3. There is a need to design holistic well-being initiatives in educational and community settings that combine physical health promotion with mental health support to maximize the overall life satisfaction.
4. There is a dire need to foster the psychological flexibility through adaptive

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coping skills training, acceptance-based therapies, and activities that inspire openness to change and desired personal development.

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