International Journal of Physical Education, Sports and Health 2025; 12(1): 219-225

P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (RJIF): 5.38
IJPESH 2025; 12(1): 219-225

https://www.kheljournal.com
Received: 04-10-2024
Accepted: 08-11-2024

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Prevalence of hypokinetic diseases and resiliency among male midlife adults in relation to their physical activity status: A qualitative exploration

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DOI: https://doi.org/10.22271/kheljournal.2025.v12.i1d.3652

Abstract
The primary goal of this investigation is to elucidate the intricate relationships between physical activity, Resiliency, and hypokinetic diseases. The present article contributes to depict the picture of prevalence of hypokinetic diseases and Resiliency among midlife adults in relation to their Physical Activity Status.
Methodology: Total three hundred (N=300) midlife adults. The age of the subjects was ranged between 35-50 years. Further, the subjects were sub-divided into physically active, moderately active and inactive categories as per their physical activity status. The variables selected for the present study were (i) Hypokinetic diseases which includes (a)BMI (b)High blood pressure(c) Diabetes (d) Coronary heart disease (CHD) (e) low Back problems (f) Joint disorder (ii) Resiliency.
Tools Used: Self constructed demographic information Proforma for hypokinetic diseases was administrated to assess the prevalence of hypokinetic diseases. Brief Resiliency Scale (BRS) 2008 was used to measure Resiliency among midlife adults, International Physical Activity Questionnaire (IPAQ) short questionnaire was used to categorise the subjects into various groups i.e. physically active, moderately active and inactive group.
Statistical Application: A normal distribution of the data was verified by using the Kolmogorov-Smirnov test & Shapiro-Wilk. Since the data did not follow a normal distribution, Kruskal-Wallis U test was used to compare the groups in question. Level of significance was set at 0.05 level for the testing of hypothesis.
Findings: The results of normality of test showed that all the selected variables didn't show the normal distribution. Kruskal-Wallis U test with regard to sub-variable of hypokinetic diseases i.e. BMI and low back pain among male midlife adults showed significant difference as the obtained $p<0.05$. and post-hoc test indicated that active group possess normal BMI as compared to their counterparts i.e. moderately active and inactive as well on the sub variable low back pain and joint disorder, inactive group had shown lower mean score as compared to their counterparts. Whereas, insignificant differences were found with regard to other sub-variables of hypokinetic diseases i.e. Blood Pressure, Diabetes, Coronary heart disease among midlife male adults as the obtained p-values found higher than 0.05 level of confidence the findings with regard to Resiliency among male midlife adults revealed insignificant differences as the obtained $p>0.05$.
Conclusion: It is concluded that the male midlife adults were found significantly different on sub-variables; BMI and Low back pain and Joint disorder pain, of hypokinetic diseases whereas, on the rest of sub-variables i.e. high blood pressure, Diabetes, Coronary heart disease the groups in question were found same. It is also concluded from the findings that similar level of Resiliency was found among male mid-life adults.

Keywords: Hypokinetic diseases, resiliency, physical activity

Introduction
Midlife age is significant stage of life which is associated with so many personal and professional commitments which demand one's attention. As a result, one will keep reassessing one's priorities, goals and requirements. sometimes our professional commitments have been accomplished at the cost of personal priorities so on and so forth. Therefore, a midlife serves as a breeding ground of various uninvited hypokinetic issues or problems. The term 'hypokinetic' is a 'movement disorder' or 'insufficient motion'. It is specifically associated with "decreased amplitude" of physical movements (Atufe Ufuoma, 2012) [5]. Engeroff *et al*. (2018) [12] stated that hypokinetic diseases associated with lack of physical

activity, and also linked to a range of negative health outcomes, including obesity, type 2 diabetes, and cardiovascular disease. With aging, people tend to inclined towards sedentary behaviour and decreasing levels of physical activity have been cited as causes of rising obesity rates and pose a significant public health risk. Akhtar (2022) [1] studied the pattern and prevalence of productivity loss, due to chronic diseases among middle-aged and elderly in India and unveiled that Chronic diseases are mounting at faster rate in India. However, the middle-aged and elderly population those who were of them were in working age, largely influenced by the chronic disease. Physical activities play important role in governing the quality of our life. Caspersen *et al*. (1985) [9] defined physical Activity as "bodily movement produced by skeletal muscles that results in energy expenditure". A large body of research suggested a linear association between physical activity and hypokinetic diseases as cited by Bauman (2016) [7] that Physical activity (PA) is a vital lifestyle element contributes to facilitate a healthy aging. Boule (1993) [8] stated that participation in physical activity at a regular basis is associated with a great amount of physical, psychological and physiological benefits. similarly, Olubayo-Fatiregun Ayodele and Olorunisola (2014) [18] stated that regular physical activity and exercise are critically significant for the health, fitness and well-being of people. Resiliency is also essential as it make a room for adaptation and therefore, worthy of attention Russo *et al*. (2012) [21]. Kanya *et al*. (2022) [15] highlighted that physical activity is critical element for improving the quality of life as it serves a foundation and contributes to minimise the risk of cardiovascular disease (CVD) as well as risk of catastrophic health expenditure, and contributes to increase the working capacity of Indonesian citizens. Resiliency among the midlife is important as they navigate through different challenges and struggle to maintain their inner peace so role of Resiliency can never be undermined under any condition. Romana *et al*. (2020) corborrated Resiliency as a 'protective element' which help an individual adapt oneself with changing dynamics of the situation and serves as platform for the progressive positive development of an individual. Therefore, Resiliency is considered as ability to bounce back of an individual. Dante-Cicchetti (2010) [10] conceptualized Resiliency as a dynamic developmental process encompassing the ability to return to the previous, so-called "normal" or healthy condition after trauma, accident, tragedy, or illness. In other words, Resiliency refers to the ability to cope with difficult, stressful and traumatic situations while maintaining or restoring normal functioning. Daly (2020) [11] highlighted that Resiliency can be understood in the light of three themes emerged from a thorough review of the existing literature (a) hardiness strengthens the ability to harness resources, (b) regulatory flexibility fosters positive functioning, and (c) challenges enhance the ability to rebound. Thus, Resiliency is a positive adaptation after stressful situations and it represents mechanisms of coping and rising above difficult experiences, i.e., the capacity of a person to successfully adapt to change, resist the negative impact of stressors and avoid occurrence of significant dysfunctions. Sisto *et al*. (2019) [22] defined that concept of psychological Resiliency is the ability to maintain the persistence of one's orientation towards existential purposes. Resiliency constitutes to a transversal attitude that can be understood as the ability to overcome the difficulties experienced in the different areas of one's life with perseverance, as well as good awareness of oneself and one's own internal coherence by activating a personal growth project. McManama-O'Brien (2021) [16] stated that Resiliency contributes to build life skills which are essential for the survival of an individual. Therefore, Resiliency is a combination of skill, positive attributes, assets and internal resources that help individual to bounce back, adapt in the face of adversity, grow from inside thus, Resiliency refers to the ability of an individual from 'surviving to thriving'. The purpose of this study is to comprehensively examine the association between hypokinetic diseases and Resiliency among male midlife adults with regard to their physical activity levels. By distilling actionable insights from this research, we aim to develop evidence-based interventions that cultivate Resiliency, promote physical activity, and ultimately, mitigate or combat the prevalence of hypokinetic diseases. Hence, the present research is an endeavour to illuminate the complex interplay between hypokinetic diseases, Resiliency and physical activity which can be helpful in unlocking insights to combat hypokinetic diseases among mid-life adults.

Methodology

Total three hundred (N=300) midlife adults. The age of the subjects was ranged between 35-50 years. Further, the subjects were sub-divided into physically active, moderately active and inactive categories as per their physical activity status. The variables selected for the present study were (i) Hypokinetic diseases which includes (a)BMI (b)High blood pressure(c) Diabetes (d) Coronary heart disease (CHD) (e) low Back problems (f) Joint disorder (ii) Resiliency.

Tools Used: Self constructed demographic information Proforma for hypokinetic diseases was administrated to assess the prevalence of hypokinetic diseases. Brief Resilience Scale (BRS) 2008 was used to measure Resiliency among midlife adults, International Physical Activity Questionnaire (IPAQ) short questionnaire was used to categorise the subjects into various groups i.e. physically active, moderately active and inactive group. A normal distribution of the data was verified using the Kolmogorov-Smirnov test & Shapiro-Wilk. Since the data did not follow a normal distribution, Kruskal-Wallis U test was used to compare the groups in question.

Results

The interpretation of results related to Kolmogorov-Smirnov & Shapiro-Wilk, Kruskal-Wallis U test along with their tables and figures with regard to hypokinetic diseases and resiliency among midlife adults in relation to their physical activity status have been presented.

Table 1: Test of Normality with regard to all the variables i.e. Hypokinetic diseases and Resiliency have been presented in table-1.

Tests of Normality with regard to the Physically Active Male Group						
	Kolmogorov-Smirnov			**Shapiro-Wilk**		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
BMI	.098	100	.020	.885	100	.000
High Blood Pressure	.478	100	.000	.476	100	.000
Diabetes	.441	100	.000	.515	100	.000
Coronary heart disease (CHD)	.533	100	.000	.322	100	.000
Low back pain	.535	100	.000	.301	100	.000
Joint disorder	.539	100	.000	.252	100	.000
Resiliency	.128	100	.000	.933	100	.000
Tests of Normality: With regard to Moderately Active Male Group						
	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
BMI	.165	100	.000	.908	100	.000
High Blood Pressure	.483	100	.000	.507	100	.000
Diabetes	.420	100	.000	.570	100	.000
Coronary heart disease (CHD)	.530	100	.000	.342	100	.000
Low back pain	.527	100	.000	.361	100	.000
Joint disorder	.535	100	.000	.301	100	.000
Resiliency	.127	100	.000	.959	100	.003
Tests of Normality: With regard to Physically Inactive Male Group						
BMI	.121	100	.001	.961	100	.005
High Blood Pressure	.434	100	.000	.629	100	.000
Diabetes	.378	100	.000	.678	100	.000
Coronary heart disease (CHD)	.486	100	.000	.492	100	.000
Low back pain	.472	100	.000	.530	100	.000
Joint disorder	.508	100	.000	.440	100	.000
Resiliency	.119	100	.001	.959	100	.003

Table 1: Shows the Kolmogorov-Smirnov and Shapiro-Wilk test statistics. As the obtained values are significant, it shows that data is not normal. Since the Kolmogorov-Smirnov and Shapiro-Wilk test is significant, it has been concluded that the data for hypokinetic disease, Resiliency variables are non-normal. To assess the Prevalence of hypokinetic diseases and Resiliency among male midlife adults in relation to their physical activity status. Kruskal-Wallis U test was computed to compare the groups in question.

Table 2: Kruskal-Wallis Test with regard to BMI among male physically active, moderately active and inactive groups

Ranks of different Groups						
Variables: Hypokinetic Disease	**Group**	**N**	**Mean Rank**	**Chi-Square**	**Df**	**Asymp. Sig.**
BMI	Active	100	137.07	6.206	2	.045*
	moderate	100	147.32			
	inactive	100	167.12			
	Total	300				

A Kruskal-Wallis H test showed that there was a statistically significant difference in BMI score between the different groups, $\chi 2(2) = 6.201$, $p = 0.045$, with a mean rank BMI score of active male group is 137.07, for moderate group is 147.32 and for inactive group is 167.12. Since the obtained p-value 0.045* was found statistically significant, therefore, Post-hoc test i.e. paired comparison was applied to find out the degree and direction of differences between paired means among physically active, moderately active and inactive groups with regard to the sub-variable BMI of hypokinetic diseases. The results of Post-hoc test have been presented in table-3.

Table 3: Paired mean comparison of groups with regard to BMI of Physically Active, Moderately active and Inactive groups among male midlife adults

Groups Average rank	**Groups(I) and Group (II)**	**Test Statistic (Mean Difference)**	**SE**	**Std- test Statistic**	**Sig**	**Adj. Sig.**
Active (137.07)	Active- Moderate	-10.250	12.266	-.836	.403	1.000
Moderate (147.32)	Moderate-Inactive	-19.805	12.266	-1.615	.106	.319
Inactive (167.12)	Active- Inactive	-30.055	12.266	-2.450	.014	.043*

*Asymptotic significances (2 Sided Tests) the level of significance 0.05

The mean difference between active and moderately active groups was found .403. The Adj.Sig. (p-value) (sig.) 1.000 showed insignificant difference between physically active and moderately active groups on the sub-variable BMI. Moderately active group had scored higher on sub variable BMI than their counterpart active group.

The mean difference between physically active and inactive was found .014. The Adj. Sig. (p-value) (sig.) .043 showed that inactive group had scored higher on the sub-variable BMI than their counterpart physically active group.

The mean difference between moderately active and inactive group was found .106. The p-value (sig.) .319 showed that inactive group had demonstrated higher BMI than their counterpart moderately active group.

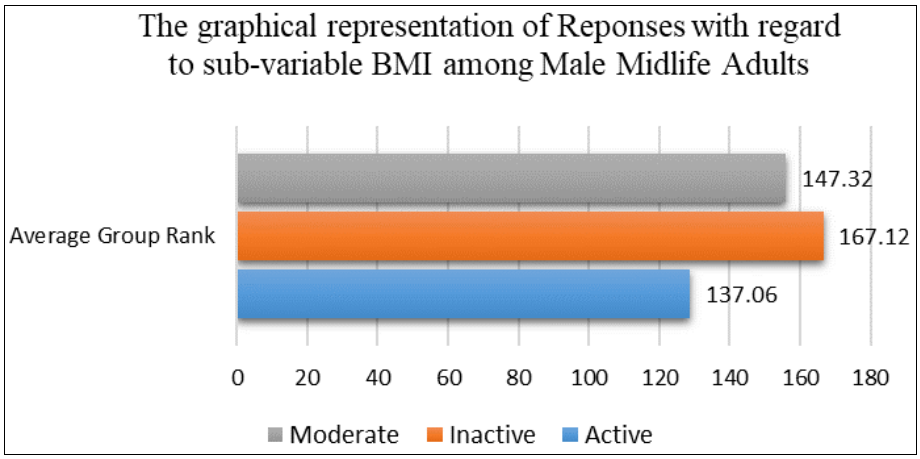

Fig 1: The graphical representation of responses has been exhibited

Table 4: Kruskal-Wallis Test with regard to all the sub -variables i.e. High Blood Pressure, Diabetes, Coronary heart disease (CHD), Low back pain, Joint disorder among male physically active, moderately active and inactive groups.

Ranks of different Groups						
Variable: Hypokinetic Diseases	**Group**	**N**	**Mean Rank**	**Chi-Square**	**Df**	**Asymp. Sig.**
High Blood Pressure	Active	100	141.81	5.413	2	.067
	moderate	100	148.91			
	inactive	100	160.79			
	Total	300				
Diabetes	Active	100	149.64	.032	2	.984
	moderate	100	150.97			
	inactive	100	150.89			
	Total	300				
Coronary heart disease (CHD)	Active	100	148.91	.238	2	.888
	moderate	100	150.40			
	inactive	100	152.19			
	Total	300				
Low back pain	Active	100	141.00	11.742	2	.003*
	moderate	100	145.50			
	inactive	100	165.00			
	Total	300				
Joint disorder	Active	100	144.50	6.201	2	.045*
	moderate	100	147.50			
	inactive	100	159.50			
	Total	300				

The results with regard to sub-variable i.e. High Blood Pressure results showed statistically insignificant difference among different groups, $\chi2(2) = 5.413$, $p = .067$, with a mean rank of Blood Pressure score of physically active male group is 141.81, for moderately active group is 148.91 and inactive group is 160.79. Since the obtained p-value 0.067 was found statistically insignificant, therefore, Post-hoc test was not applied.

On the sub-variable i.e. Diabetes, test showed statistically insignificant difference among different groups, $\chi2(2) = .032$, $p = .984$, with a mean rank of Diabetes score of physically active male group is 149.64, for moderately group is 150.97 and inactive group is 150.89. Since the obtained p-value .984 was found statistically insignificant, therefore, Post-hoc test was not applied.

With regard to sub-variable i.e. Coronary heart disease (CHD), A Kruskal-Wallis H test showed that there was a statistically insignificant difference among different groups, $\chi2(2) = .238$, $p = .888$, with a mean rank Coronary heart disease (CHD) score of physically active male group 148.91, for moderately group is 150.40 and inactive group is152.19. Since the obtained p-value .888 was found statistically insignificant, therefore, Post-hoc test was not applied.

With regard to sub-variable i.e. Low back pain, Kruskal-Wallis H test showed that there was a statistically significant difference among different groups, $\chi2(2) = 11.742$, $p = 0.003$, with a mean rank score of low back pain of physically active male group is 141.00, for moderately group is145.50 and inactive group is 165.00. Since the obtained p-value 0.003 was found statistically significant, therefore, Post-hoc test i.e. paired comparison was applied to find out the degree and direction of differences between paired means among physically active inactive and moderately groups with regard to the sub-variable low back pain. The results of Post-hoc test have been presented in table-5.

Table 5: Paired mean comparison of groups with regard to sub-variable i.e. Low back pain physically Active, Moderately active and Inactive group among male midlife adults

Groups Average rank	Groups(I) and Group (II)	Test Statistic (Mean Difference)	SE	Std- test Statistic	Sig	Adj.Sig.
Active (141.00)	Active- Moderate	4.500	7.446	.604	.546	1.000
Moderate (145.50)	Moderate-Inactive	19.500	7.446	2.619	.009	.026*
Inactive (165.00)	Active- Inactive	24.000	7.446	3.223	.001	.004*

*Asymptotic significances (2 Sided Tests) the level of significance 0.05

The mean difference between physically active and moderately active groups was found .546. The Adj.Sig. (p-value) (sig.) 1.00 showed insignificant difference between physically active and moderate groups on the sub-variable low back pain. Physically active group had scored lower on the sub-variable low back pain than their counterpart moderately group.

The mean difference between physically active and inactive group was found .001. The Adj.Sig. (p-value) (sig.) .004 showed that physically active group had demonstrated lower score on the sub-variable low back pain than their counterpart Inactive group.

The mean difference between moderately active and inactive group was found .009 The p-value (sig.) .026 showed significant difference between moderately active and inactive groups on the sub-variable low back pain as the moderately active group had exhibited lower score than their counterpart inactive group.

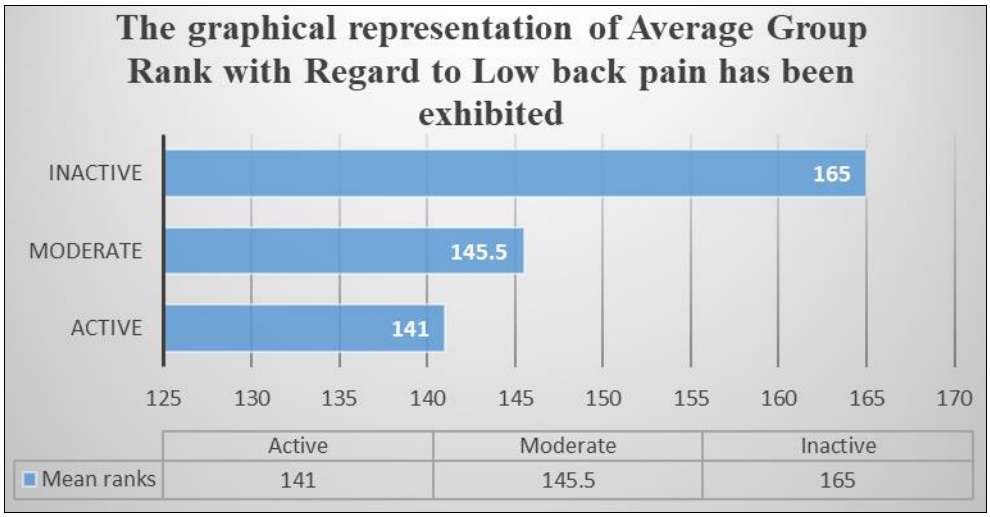

Fig 2: The graphical representation of responses has been exhibited

With regard to sub- variable i.e. joint disorder, test showed statistically significant difference in the score of different groups, $\chi 2(2) = 6.201$, $p = .045$, with a mean rank joint disorder score of physically active male group 144.50, for moderately group is 147.50 and inactive group 159.50. Since the obtained p-value 0.045 was found statistically significant, therefore, Post-hoc test i.e. paired comparison was applied to find out the degree and direction of differences between paired means among physically active, moderately active and inactive groups with regard to the sub-variable joint disorder. The results of Post-hoc test have been presented in table-6

Table 6: Paired comparison of groups with regard to sub-variable joint disorder physically Active, Moderately and Inactive group male midlife adults

Groups Average rank	Groups (I) and Group (II)	Test Statistic (Mean Difference)	SE	Std- test Statistic	Sig	Adj. Sig.
Active (144.50)	Active- Moderate	-3.000	6.375	.475	.638	1.000
Moderate (147.50)	Moderate-Inactive	-12.000	6.375	-1.882	.060	.0179
Inactive (159.50)	Active- Inactive	-15.000	6.375	-2.353	.019	.056*

*Asymptotic significances (2 Sided Tests) the level of significance 0.05

The mean difference between physically active and moderately groups was found .638 The Adj.Sig. (p-value) (sig.) 1.000 showed insignificant difference between physically active and moderately active groups on the sub-variable joint disorder. Physically active group had demonstrated lower score on the sub-variable joint disorder than their counterpart moderately active group.

The mean difference between Active and inactive was found .019 The Adj.Sig.(p-value) (sig.) .056 showed that physically active groups had exhibited lower score on the sub-variable joint disorder than their counterpart Inactive group.

The mean difference between moderately active and inactive group was found .060 The p-value (sig.) .0179 showed insignificant difference between moderately active and inactive groups on the sub-variable joint disorder as the moderately active group scored lower than their counterpart inactive group.

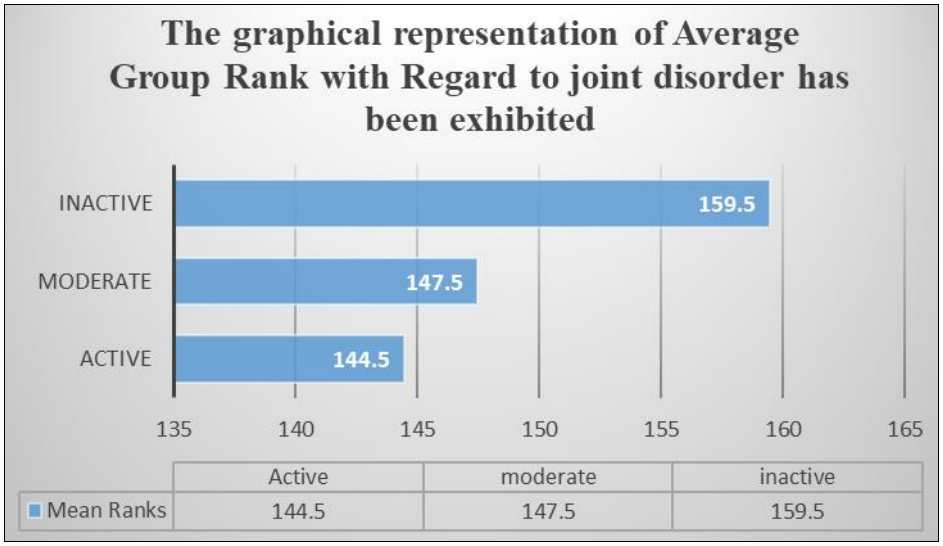

Fig 3: The graphical representation of responses has been exhibited

Table 7: Kruskal-Wallis Test results with regard to variable Resiliency among male midlife adults

Ranks of different Groups						
Variable	**group**	**N**	**Mean Rank**	**Chi Square**	**df**	**Asymp. Sig.**
Resiliency	Active	100	155.88	2.035	2	.362
	Moderate	100	155.16			
	Inactive	100	140.46			
	Total	300				

With regard to variable i.e. Resiliency, A Kruskal-Wallis H test showed that there was a statistically insignificant difference among different groups, $\chi 2(2) = 2.035$, $p = .362$, with a mean rank Resiliency score of physically active male group is 155.88, for moderately active group is 155.16 and inactive group is 140.46. Since the obtained p-value .362 was found statistically insignificant, therefore, Post-hoc test was not applied.

Discussion

It is evident from the results presented in tables-1 that all the selected variables did not reveal normal distribution. It is depicted from the findings of table-2 & 3 with regard to the sub-variable of hypokinetic diseases i.e. BMI among male midlife adults showed significant difference as the obtained p-value .045* was found lower than 0.05 level of significance. Therefore, Post-hoc test i.e. paired comparison was applied to find out the degree and direction of differences among the groups in question. It has been observed that physically active group possess normal BMI as compared to their counterpart i.e. moderately active and inactive group. However, the findings from Kruskal-Wallis H test (tables-4 to 6) showed no significant differences with regard to sub-variables of hypokinetic diseases i.e. High Blood Pressure, Diabetes, Coronary heart disease (CHD) among male midlife adults as the obtained p-value .067, p-value .984 and p-value .888 were found higher than 0.05 level of significance. However, statistically significant difference was found with regard to sub-variables low back pain and joint disorder as the obtained p-value .003* and .045* was found lower than 0.05 level of significance. Therefore, Post-hoc test i.e. paired comparison was applied. It showed that inactive group had demonstrated higher mean score as compared to their counterparts i.e. physically active and moderately active midlife male group, therefore, may be more prone to low back pain and joint disorder. The findings of Kruskal-Wallis test table-7 with regard to Resiliency among male midlife adults revealed insignificant differences as the obtained p-value .362 was statistically higher than 0.05 level of significance. The findings might be due to the fact that adults aged between 35-45 years of age, with the progression of aging, their body may undergo natural physiological changes that could affect their body composition, muscle mass and bone density. These changes may occur regardless of their involvement in physical activity. Other elements which may contribute to influence might be their life style, environmental factors, working/occupational conditions as well as their genetic predispositions. However, male midlife adults exhibited similar level of Resiliency. The findings of the present study are in line with the study conducted by Roychowdhury (2020) [20] corroborated that general involvement in various physical activities contributes to delaying the sign of various age-related diseases. Similarly, as revealed by fanning *et al.* (2022) [13] that active aging occurred post pandemic Covid-19 trigger the thought that sedentary lifestyle associated with negative health outcomes. Alam and Bose (2021) [2] had highlighted that economic turndown was substantiate to influence the physical activity level. Kanya *et al.* (2022) [15] stated that physical activity is critical element for improving the quality of life as it serves as a foundation and contributes to minimise the risk of cardiovascular disease (CVD) as well as the risk of catastrophic health expenditure and contributes to increase the working capacity of Indonesian citizens. Feliciano (2022) [14] highlighted that due to different exposure or experiences, a person would develop aging-related resiliency in his/her later life, as he/she develop the ability to accept, adapt oneself and learn to respond instead of react. Amoadu *et al.* (2024) [3] explored that statistically insignificant academic Resiliency was observed across the genders. Petare and Shaikh (2021) [19] substantiated that Male and female didn't differ in their Psychological Resiliency. Similarly, Ari and Carkit (2020) [4] examined the Resiliency in terms of gender and revealed insignificant difference between male and female with regard to Resiliency. Narwal (2021) [17] also revealed no significant gender differences with regard to Resiliency between male and female athletes.

Conclusion

It is concluded from the above findings that results with regard to sub-variables of hypokinetic diseases i.e. High Blood Pressure, Diabetes, Coronary heart disease (CHD) were found statistically insignificant among male midlife adults as obtained p-values were found higher ($P>0.05$) than the desired level of significance. However, with regard to the sub-

variable of hypokinetic diseases i.e. BMI, Low back pain and joint disorder, significant differences were observed among male midlife adults. Physically active group possesses better BMI as compared to their counterparts i.e. moderately active and inactive group. Whereas on the sub-variables Low back pain and joint disorder inactive group was more vulnerable than their counterparts i.e. physically active and moderately active group. However, all the groups in question had shown similar level of Resiliency, therefore, it is safely surmised that male midlife adults developed equally on the variable Resiliency.

Acknowledgement
The author appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interest
The author declared no conflict of interest

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