Blueprint Academic Publishers

Journal of Frontiers in Humanities and Social Sciences
Journal ISSN: 3005-513X
4(3)
Received: October 02, 2026
Revised: October 31, 2026
Published: November 07, 2026

Effect of Physical Fitness Programmes on Employee Engagement at a Thermal Power Station in Wajir County, Kenya

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Abstract

Employees in remote thermal power stations face demanding working conditions, including shift schedules, occupational pressures and limited access to health and recreational facilities. Despite the potential of physical fitness programmes to improve employee well-being and work engagement, empirical evidence on their effect on employee engagement in remote settings remains limited. This study therefore examined the effect of physical fitness programmes on employee engagement at a remote thermal power station in Wajir County, Kenya, using hierarchical multiple regression analysis. Guided by the Job Demands–Resources Model, the study adopted a positivist paradigm and an explanatory cross-sectional survey design. A census approach targeted all 350 employees, of whom 285 returned questionnaires and 280 provided usable responses, representing an effective response rate of 80.0%. Data were collected using a structured questionnaire, with physical fitness programmes measured through eight researcher-developed items assessing their availability, accessibility and organisational support, while employee engagement was measured using the nine-item Utrecht Work Engagement Scale (UWES-9), covering vigour, dedication and absorption. Data were analysed using descriptive statistics, Pearson product-moment correlation and hierarchical multiple regression in SPSS Version 27. The findings indicated that employees had favourable perceptions of physical fitness programmes ($M = 4.02$, $SD = 1.12$) and reported high employee engagement ($M = 4.03$, $SD = 1.08$). Physical fitness programmes had a strong positive correlation with employee engagement ($r = .767$, $p < .01$) and remained a significant positive predictor after controlling for age, gender, education and other workplace wellness initiatives ($\beta = .355$, $t = 7.113$, $p < .001$). The inclusion of wellness initiatives increased the explained variance in employee engagement by 27.0% ($\Delta R^2 = .270$, $p < .001$), with the final model accounting for 73.0% of the variance ($R^2 = .730$; adjusted $R^2 = .722$). Physical fitness programmes emerged as the strongest predictor among the wellness initiatives examined. The study concludes that

accessible and organisationally supported physical fitness programmes are significantly associated with higher employee engagement in remote electricity-generation environments. It recommends strengthening shift-compatible exercise opportunities, maintaining suitable fitness facilities and improving health screening and follow-up support.

Keywords: Physical fitness programmes; employee engagement; workplace wellness; vigour; dedication; absorption; thermal power station; Kenya.

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Funding: The author received no financial support for the research, authorship and/or publication of this article

Data Availability Statement: The authors confirm that the data supporting the findings of this study are available within the article [and/or] its supplementary materials or upon reasonable request.

Competing interests: The authors declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Introduction

Employee engagement, defined as a positive, fulfilling work-related state of mind characterized by vigor, dedication, and absorption (Schaufeli et al., 2002), has emerged as a fundamental focus in contemporary organizational psychology. Scholars consistently associate higher engagement levels with superior job performance, heightened organizational citizenship behavior, improved adherence to safety protocols, stronger employee retention, and reduced rates of burnout (Hakanen & Kaltiainen, 2026; Rich et al., 2010; Saks & Gruman, 2014). However, engagement must be maintained as a conceptually distinct construct from traditional operational metrics such as employee performance, turnover, absenteeism, and organizational productivity. As Kahn (1990) established, while engagement represents an employee's intrinsic psychological and motivational connection to their tasks, performance measures task accomplishment, absenteeism tracks scheduled time lost, turnover measures separation, and productivity reflects input-to-output efficiency. Consequently, while positive operational outcomes frequently correlate with engaged workforces, output metrics cannot independently establish or measure the underlying presence of work engagement.

Globally, organizations increasingly integrate workplace physical fitness programs including structured aerobic exercises, strength training, flexibility routines, organized sports, and group activity sessions into wider occupational health promotion strategies. Recent epidemiological and longitudinal cohort research highlights a direct connection between personal activity habits and psychological state at work. For instance, findings from the Northern Finland Birth Cohort 1966 demonstrate that higher participation in

leisure-time physical activity and sports correlates with elevated work engagement across its core subdimensions, whereas elevated sedentary behavior relates to lower overall engagement, particularly impacting vigor and absorption (Kiema-Junes et al., 2022). Expanding on this relationship, longitudinal analysis across multiple waves of Japanese workforce data confirms that initiating regular exercise habits produces statistically significant gains in work engagement, whereas discontinuing physical activity leads to measurable declines in engagement levels (Kashima et al., 2026). Meta-analytic reviews of workplace physical activity interventions further indicate that structured exercise regimes yield significant improvements in employee physical and mental health indicators (Nath et al., 2025; Zhang et al., 2025).

Despite these positive global trends, implementing health promotion initiatives within continuous industrial operations introduces significant environmental and structural barriers. In continuous-process infrastructure, continuous operations, rotating shift schedules, and heavy operational workloads alter circadian rhythms, sleep architectures, and physical recovery patterns (Fenwick et al., 2026). Furthermore, empirical research among industrial professionals demonstrates that severe time constraints and operational fatigue act as major deterrents to physical activity participation within safety-critical environments (Tita et al., 2026). Consequently, the overall effectiveness of workplace fitness interventions depends not merely on the passive presence of facilities, but on program accessibility, scheduling flexibility, and perceived organizational support. Within African industrial environments, regional studies confirm that workplace health promotion positively influences operational settings; for example, participatory health activities at commercial power generation plants in South Africa yielded notable improvements in psychosocial work environments and non-communicable disease risk profiles (Schouw et al., 2018; Schouw et al., 2020). Similarly, Kenyan workplace research demonstrates that safety conditions drive manufacturing productivity (Mutegi et al., 2023) and engagement enhances overall firm performance (Komen, 2024). However, much of the empirical literature in Kenya has focused on corporate commercial settings like insurance firms (Karori, 2023), leaving a clear gap regarding how fitness programs function within remote, shift-based energy utilities.

Looking into the specific geographic and operational context, electricity generation in remote regions presents compounded workplace stressors. Remote industrial duty stations are characterized by geographical isolation, extreme climatic conditions, limited community infrastructure, and distance from urban amenities and family support systems (County Government of Wajir, 2023). At the Wajir Power Station in Kenya a remote thermal power generation facility maintaining a workforce of approximately 350 personnel across plant operations, mechanical maintenance, electrical instrumentation, fuel handling, safety, and administration (Wajir Power Station, 2024) administrative records from 2022 through 2024 reveal an average employee absenteeism rate of 8 percent, substantially exceeding the organizational target benchmark of 5 percent. Internal administrative records over the same period document frequent instances of unplanned overtime and recurring fatigue reports. While the

power station provides basic exercise equipment, periodic health screenings, and organized sports events, the persistent elevated absenteeism rates and fatigue complaints raise substantive questions regarding whether existing health amenities are truly accessible and tailored to support employee well-being across rotating shift patterns.

Though the existing studies establishes broad links between physical activity interventions and general health improvements (Nath et al., 2025; Park et al., 2026; Zhang et al., 2025) as well as general work engagement (Kashima et al., 2026; Kiema-Junes et al., 2022), critical empirical questions remain unanswered regarding remote industrial settings. Existing studies have largely evaluated health outcomes, presenteeism, or general office environments, leaving a limited understanding of how specific fitness program components relate directly to the psychological subdimensions of work engagement within technically demanding power plants. Specifically, current evidence does not clarify how employees' perceptions of facility availability, structured exercise sessions, group sports activities, and direct organizational encouragement influence their experienced levels of vigor, dedication, and absorption during high-hazard operations. To address this empirical gap, the present study investigates the effect of physical fitness program provision on employee engagement at the remote Wajir Power Station in Wajir County, Kenya.

Empirical Review

Empirical evidence suggests that physical activity and workplace fitness initiatives may influence employee engagement. Kiema-Junes et al. (2022) found that employees who reported higher levels of physical activity and sports participation also reported higher levels of work engagement, while sedentary behaviour was associated with lower vigour and absorption. Similarly, Kashima et al. (2026), using longitudinal data from 6,576 Japanese employees, established that the adoption of exercise habits was associated with subsequent improvements in work engagement, whereas discontinuing exercise was associated with reductions in engagement. These findings suggest that physical activity may positively influence employees' psychological investment in their work. However, both studies focused on individual exercise behaviour rather than employer-sponsored fitness programmes.

Research examining workplace interventions further indicates that organizational efforts to promote physical activity can influence employee outcomes. Ramezani et al. (2022) highlighted the role of workplace initiatives in increasing participation in physical activity, while Marín-Farrona et al. (2023) and Zhang et al. (2025) reported positive health and work-related outcomes associated with workplace physical activity programmes. Likewise, Nath et al. (2025), in a meta-analysis of 80 randomized controlled trials, found that workplace physical activity interventions produced significant improvements in employees' physical health, mental health, and selected organizational outcomes. Although these studies did not specifically examine employee engagement, they provide evidence that organization-supported physical activity programmes can generate positive employee outcomes.

Evidence from industrial environments also points to the potential benefits of workplace fitness interventions. Park et al. (2026) evaluated a wearable technology-supported health intervention among coal-fired power plant employees and reported

improvements in several physical and functional health indicators. Similarly, Sun et al. (2026) found that a blended intervention involving online education and electronic workshops increased employees' physical activity levels. While these studies did not directly measure employee engagement, they suggest that structured workplace fitness programmes can produce beneficial employee outcomes within demanding work environments.

In Kenya, Karori (2023) examined workplace wellness programmes among employees at Old Mutual Kenya and found that physical fitness programmes had a positive and statistically significant effect on employee engagement. Similarly, Kathukya et al. (2025) reported that corporate wellness programmes significantly influenced employee engagement among employees in five-star hotels in Kenya. These findings provide local evidence that workplace wellness initiatives can contribute to employee engagement. However, the studies were conducted in service-sector environments whose operational characteristics differ considerably from those of electricity-generation facilities. In South Africa, Kumar et al. (2020) similarly reported that employee wellness initiatives positively influenced work engagement in a public-sector organization. Schouw and Mash (2020) also documented improvements in employee health outcomes following the implementation of workplace health promotion interventions in a commercial power plant. However, employee engagement was not examined directly.

Not all studies have reported positive outcomes. Song and Baicker (2019), in a randomized evaluation of a workplace wellness programme, found improvements in certain health behaviours but reported limited effects on several organizational and employment outcomes. Similarly, Vainre et al. (2024) demonstrated the feasibility of workplace exercise interventions but found inconclusive evidence regarding some work-related outcomes. These findings suggest that the effectiveness of workplace fitness programmes may depend on factors such as programme accessibility, employee participation, implementation quality, and organizational support.

Therefore, existing literature indicates that physical activity and workplace fitness initiatives can positively influence a range of employee outcomes, including work engagement. However, most previous studies have examined individual exercise behaviour, general wellness programmes, employee health outcomes, or organizations operating in non-industrial settings. Limited attention has been given to the effect of employer-supported physical fitness programmes on employee engagement in remote electricity-generation facilities. Moreover, evidence from the Kenyan energy sector remains scarce. The present study therefore addresses this gap by examining the effect of physical fitness programmes on employee engagement, measured through vigour, dedication, and absorption, among employees at a remote thermal power station in Kenya.

H_{01}: *Physical fitness programmes have no statistically significant effect on employee engagement at a remote thermal power station in Kenya.*

Theoretical Framework

This study is guided by the Job Demands–Resources (JD–R) Model developed by Bakker and Demerouti (2007). The model explains employee wellbeing and work engagement through the interaction between job demands and job resources. Job demands refer to physical, psychological, social and

organisational aspects of work that require sustained effort and may result in physical or psychological strain. Job resources are aspects of the work environment that facilitate goal achievement, reduce job demands and stimulate employee growth, motivation and development. According to the model, adequate job resources promote the motivational process that leads to higher employee engagement.

The JD–R Model is relevant to employees at a remote thermal power station because their working environment may involve shift schedules, demanding operational responsibilities, physical exertion, environmental conditions and limited access to recreational facilities. These conditions may increase employees' physical and psychological demands. Physical fitness programmes, including accessible exercise facilities, organised workout sessions, fitness classes and group exercise activities, may function as organisational resources by supporting employees' physical wellbeing, energy and resilience. Such resources may help employees maintain the vigour, dedication and absorption required to perform their duties.

Bakker et al. (2023) further explain that job resources contribute to employee motivation and engagement by supporting employees in managing work demands and achieving work goals. In this study, the availability and accessibility of physical fitness programmes are therefore conceptualised as organisational resources that may positively influence employee engagement. The model provides a theoretical basis for examining whether employees who perceive greater access to physical fitness programmes also report higher levels of engagement. It consequently guides the hypothesised effect of physical fitness programmes on employee engagement at the remote thermal power station in Kenya.

Methodology

This study adopted the positivist research paradigm, which assumes that relationships among organizational phenomena can be objectively observed, measured, and quantified. The paradigm was considered appropriate because the study sought to examine the effect of physical fitness programmes on employee engagement using established measurement scales and statistical analysis techniques (Saunders et al., 2019). An explanatory cross-sectional survey design was employed. The design was explanatory because it sought to test the hypothesized relationship between physical fitness programmes and employee engagement, and cross-sectional because data were collected from respondents at a single point in time. The survey approach was suitable for obtaining information from a large workforce within a limited period while allowing standardized data collection across all respondents.

The study was conducted at a remote thermal power station located in Wajir County, Kenya. The station is one of the off-grid power facilities responsible for supplying electricity to areas not connected to the national grid. It operates continuously under a shift-working system in a hot and arid environment approximately 700 kilometres from Nairobi. Due to its remote location, employees largely reside within a station-adjacent residential compound where access to external recreational and fitness facilities is limited. Consequently, employer-supported fitness initiatives play an important role in promoting employees' physical wellbeing and potentially their engagement at work.

The target population comprised all 350 employees of the thermal power station as captured in the 2024 Human Resources nominal roll. A census approach was adopted rather than a sample survey to eliminate sampling error and ensure representation of all departments and employee cadres. The workforce consisted of employees drawn from Plant Operations (105), Mechanical Maintenance (81), Electrical and Instrumentation (64), Fuel Handling and Stores (32), Safety, Health and Environment (13), Administration, Human Resource and Finance (26), and Security and Transport (29). In terms of cadre distribution, the station had 8 management staff, 259 technical staff, and 83 support staff. The inclusion of all employees ensured comprehensive coverage of the workforce, including smaller departments and management personnel whose views might otherwise have been underrepresented.

Data were collected using a structured self-administered questionnaire consisting of sections on demographic characteristics, physical fitness programmes, and employee engagement. Physical fitness programmes constituted the independent variable and were measured using eight researcher-developed items assessing employees' perceptions regarding the availability, accessibility, and supportiveness of workplace fitness initiatives. The items were developed from workplace health promotion literature and covered aspects such as exercise facilities, organized fitness sessions, group exercise activities, health screening programmes, follow-up wellness activities, and fitness-related events (Parks & Steelman, 2008; Pham et al., 2020; Marín-Farrona et al., 2023). Responses were measured on a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), and a composite score was computed using the mean of the eight items.

Employee engagement, the dependent variable, was measured using the Utrecht Work Engagement Scale (UWES-9) developed by Schaufeli et al. (2006). The instrument assesses the three dimensions of engagement namely vigour, dedication, and absorption. Respondents indicated their level of agreement with nine engagement statements using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). A composite employee engagement score was obtained by calculating the mean score across all nine items.

Prior to the main study, a pilot study was conducted at Garissa Power Station, a comparable off-grid thermal power station. The pilot involved 35 employees, representing approximately 10% of the target population. The participants were excluded from the main study to avoid respondent contamination. The pilot exercise assessed the clarity of questionnaire items, completion time, and data collection procedures, and the feedback obtained was used to refine the research instrument.

Validity and reliability of the questionnaire were established before the main data analysis. Content validity was assessed by a panel of five experts comprising two university supervisors, two human resource management academics, and a human resource manager from the pilot station. The experts evaluated each questionnaire item for relevance, clarity, and appropriateness, leading to refinement of items where necessary. Face validity was further assessed during pilot testing to ensure that respondents understood the items as intended. Reliability was assessed using Cronbach's alpha coefficient. The physical fitness programmes scale achieved a reliability

coefficient of α = .721, while the employee engagement scale attained α = .753. Both values exceeded the recommended threshold of 0.70, indicating acceptable internal consistency of the measurement scales (Nunnally & Bernstein, 1994; Hair et al., 2019).

Data were analyzed using Statistical Package for Social Sciences (SPSS) Version 27. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize respondents' characteristics and study variables. Pearson product-moment correlation analysis was conducted to establish the direction and strength of the relationship between physical fitness programmes and employee engagement. The study hypothesis was tested using Hierarchical multiple linear regression analysis to examine the effect of physical fitness programmes on employee engagement. The regression model was specified as: The regression models were specified as follows:

Model 1: Control variables

$Y = \beta_0 + \beta_1 C_1 + \beta_2 C_2 + \beta_3 C_3 + \varepsilon$

Model 2: Physical fitness programmes

$Y = \beta_0 + \beta_1 C_1 + \beta_2 C_2 + \beta_3 C_3 + \beta_4 X + \varepsilon$

Where:

Y = Employee engagement

X = Physical fitness programmes

C_1 = Age

C_2 = Gender

C_3 = Education level

β_0 = Regression constant

$\beta_1, \beta_2, \beta_3, \beta_4$ = Regression coefficients

ε = Error term

The significance of the regression coefficients, coefficient of determination (R^2), adjusted R^2 and change in explained variance (ΔR^2) were assessed to establish the influence of physical fitness programmes on employee engagement. Statistical significance was evaluated at the 0.05 level of significance.

Results

Response Rate

All 350 employees were surveyed; 285 questionnaires were returned (81.4%) and, after five questionnaires with substantial missing sections were excluded, 280 were usable an effective response rate of 80.0% (Table 1). The high return rate reflects direct administration, supervisor-facilitated access, repeated follow-ups and anonymity assurances. A census design means the respondents *are* the accessible workforce rather than a sample of it; nonetheless, the 20% non-response could introduce bias if non-respondents differed systematically from respondents, for example by shift or department Incomplete questionnaires were defined as those with entire sections unanswered; questionnaires with isolated missing items were retained, with composite scores computed from available items.

Table 1: Response rate

Category	Frequency	Percentage (%)
Questionnaires distributed (census)	350	100.0
Questionnaires returned	285	81.4
Incomplete / rejected	5	1.4
Usable questionnaires analysed	280	80.0

Descriptive results

Physical fitness programmes recorded a high composite mean (M = 4.02, SD = 1.12), indicating that employees agreed that the station actively supports their physical wellbeing; the negative composite skewness (−1.16) confirms that responses clustered towards the agreement end of the scale. The highest ratings concerned the suitability of fitness facilities to the local climate and conditions (M = 4.29, SD = 0.99), wellness activities such as sports days and team events (M = 4.27, SD = 0.90), employees' ability to take part in fitness activities during or around their shifts (M = 4.23, SD = 1.01), and the perception that the station takes practical steps to protect and improve employee health (M = 4.19, SD = 1.08). Periodic health screening recorded the lowest mean (M = 3.69, SD = 1.34), suggesting that preventive health provision is less developed than recreational provision. Item-level results are presented in Table 2.

Table 2. Descriptive statistics for physical fitness programmes

Item	M	SD	Skewness	Kurtosis
The station provides organised physical exercise facilities or sessions for staff.	3.80	1.210	−0.683	−0.708
I am able to take part in the station's fitness activities during or around my shift.	4.23	1.008	−1.405	1.241
Fitness classes or group exercise sessions are offered regularly at this station.	3.82	1.182	−0.734	−0.535
The station organises periodic health screening for employees.	3.69	1.338	−0.691	−0.844
I receive feedback and follow-up support after health screening.	3.86	1.240	−0.814	−0.607
Wellness activities such as sports days or team events are held at this station.	4.27	0.900	−1.402	1.677
The physical fitness facilities provided are suitable for the climate and conditions here.	4.29	0.994	−1.853	3.244
Overall, the station takes practical steps to protect and improve my physical health.	4.19	1.075	−1.680	2.382
Composite	**4.02**	**1.120**	**−1.160**	**0.730**

Employee engagement likewise recorded a high composite mean (M = 4.03, SD = 1.08). Dedication items scored highest, with employees reporting that their job inspires them (M = 4.35, SD = 0.92) and that they are enthusiastic about it (M = 4.33, SD = 0.91); the absorption item "I am immersed in my work" also scored highly (M = 4.33, SD = 0.94). The lowest-rated items were the vigour item "At work, I feel energetic" (M = 3.52, SD = 1.37) and the absorption item "I feel happy at work" (M = 3.52, SD = 1.24), suggesting that sustaining energy in this demanding environment is a relative weakness in an otherwise engaged

workforce. Item-level results are presented in Table 3.

Table 3. Descriptive statistics for employee engagement

Item (dimension)	M	SD	Skewness	Kurtosis
At work, I feel energetic. (Vigour)	3.52	1.368	−0.528	−1.064
At my job, I feel strong. (Vigour)	3.87	1.222	−0.774	−0.711
When I wake up, I feel motivated to work. (Vigour)	4.23	0.947	−1.445	1.772
I am enthusiastic about my job. (Dedication)	4.33	0.910	−1.830	3.558
My job inspires me. (Dedication)	4.35	0.917	−1.872	3.751
I am proud of my work. (Dedication)	4.04	1.129	−1.084	0.126
I feel happy at work. (Absorption)	3.52	1.237	−0.405	−1.028
I am immersed in my work. (Absorption)	4.33	0.942	−1.766	3.004
I get carried away when I am working. (Absorption)	4.12	1.066	−1.263	0.826
Composite	**4.03**	**1.080**	**−1.220**	**1.140**

Correlation analysis

Physical fitness programmes were strongly and positively correlated with employee engagement ($r = .767$, $p < .01$). This was the strongest bivariate association with engagement among the wellness initiatives examined, exceeding those of employee assistance programmes ($r = .706$, $p < .01$) and flexible working schemes ($r = .506$, $p < .01$). Intercorrelations among the predictors were moderate to strong ($r = .348$ to $.701$) but below levels that would threaten the regression estimates, consistent with the multicollinearity diagnostics reported in Section 3.6. The correlation between the focal variables is presented in Table 3.

Table 3. Pearson correlation matrix

Variable	1	2
1. Employee engagement	1	
2. Physical fitness programmes	.767**	1

Inferential statistics: regression results and hypothesis testing

Model 1, containing only the control variables, was statistically significant (F change = 55.267, $p < .001$) and explained 46.0% of the variance in employee engagement (adjusted $R^2 = .451$); age ($\beta = .267$, $p < .001$), gender ($\beta = .165$, $p = .001$) and education ($\beta = .150$, $p = .002$) were all positively associated with engagement. Model 2, which added the three wellness initiatives, explained a further 27.0% of the variance ($\Delta R^2 = .270$, F change = 85.601, $p < .001$), increasing the adjusted R^2 to .722 and reducing the standard error of the estimate from 0.470 to 0.334. Physical fitness programmes were the strongest predictor of engagement in this model ($B = 0.062$, $\beta = .355$, $p < .001$), followed by employee assistance programmes ($\beta = .274$, $p < .001$) and flexible working schemes ($\beta = .143$, $p < .001$). Once the wellness initiatives were entered, gender and education were no longer significant,

suggesting that their initial associations with engagement overlapped substantially with differences in reported wellness provision; age retained a smaller but significant effect (β = .118, p = .001). The results are presented in Table 4.

Table 4. Hierarchical regression of employee engagement on controls and wellness initiatives

Variable	B	SE B	β	t	p
Model 1: controls					
Constant	2.204	0.127		17.356	< .001
Age	0.035	0.006	.267	5.653	< .001
Gender	0.047	0.014	.165	3.294	.001
Education	0.021	0.007	.150	3.104	.002
Model summary: R = .678; R^2 = .460; adjusted R^2 = .451; F change = 55.267, p < .001					
Model 2: + wellness initiatives					
Constant	1.206	0.110		10.944	< .001
Age	0.016	0.005	.118	3.376	.001
Gender	0.009	0.011	.031	0.831	.407
Education	0.007	0.005	.051	1.461	.145
Physical fitness programmes	0.062	0.009	.355	7.113	< .001
Model summary: R = .854; ΔR^2 = .270; adjusted R^2 = .722; F change = 85.601, p < .001					

H_{01} proposed that physical fitness programmes have no significant positive effect on employee engagement at Wajir Power Station. The results indicate a positive and significant effect (β = .355, p < .001), with physical fitness programmes emerging as the strongest of the three wellness predictors in the model. H1 is therefore rejected.

Discussion

The descriptive findings established that physical fitness programmes had a high composite mean of 4.02 (SD = 1.12), indicating that employees generally perceived the station as supportive of their physical wellbeing. The highest-rated aspects were the suitability of fitness facilities to the local climate and conditions (M = 4.29), organisation of wellness activities such as sports days and team events (M = 4.27), and employees' ability to participate in fitness activities during or around their shifts (M = 4.23). These results suggest that employees valued fitness initiatives that were adapted to their working environment and schedules. In a remote power station, the availability of accessible facilities and activities may be particularly important because employees may have limited opportunities to access external recreational facilities. The relatively high rating of shift-related accessibility further suggests that accommodating employees'

work schedules is an important consideration in implementing fitness programmes. However, periodic health screening recorded the lowest mean (M = 3.69), suggesting that preventive health assessment and follow-up support could receive greater organisational attention.

These findings are consistent with Ramezani et al. (2022), whose systematic review highlighted the importance of workplace interventions in creating opportunities for employees to participate in physical activity. Nath et al. (2025), in a meta-analysis of 80 randomised controlled trials, also established that workplace physical activity interventions produce beneficial effects on physical health, mental health and selected organisational outcomes. Their findings support the value of structured workplace fitness initiatives, although the outcomes examined were broader than employee engagement. Similarly, Park et al. (2026) reported improvements in selected physical and functional health indicators following a five-month wearable technology-supported intervention among 47 coal-fired power plant workers. This provides relevant evidence that workplace health initiatives can be implemented in electricity-generation environments.

Employee engagement also recorded a high composite mean of 4.03 (SD = 1.08), indicating generally positive engagement among respondents. Dedication was particularly prominent, with employees reporting that their jobs inspired them (M = 4.35) and that they were enthusiastic about their work (M = 4.33). Absorption was also reflected in the high rating for being immersed in work (M = 4.33). However, feeling energetic at work and feeling happy at work recorded the lowest means (both M = 3.52). This suggests that although employees generally demonstrated enthusiasm and involvement in their duties, maintaining energy and positive work experiences may be more challenging. This pattern is relevant to the operational context of a thermal power station, where shift arrangements and demanding responsibilities may affect employees' physical and psychological resources. The findings are consistent with Schaufeli et al.'s (2002) conceptualisation of engagement through vigour, dedication and absorption. In particular, the relatively lower vigour rating indicates the importance of organisational initiatives that support employees' energy and resilience.

The correlation analysis revealed a strong positive association between physical fitness programmes and employee engagement ($r = .767$, $p < .01$). This indicates that employees who reported better provision of physical fitness programmes also tended to report higher engagement. The finding is consistent with Kiema-Junes et al. (2022), who examined physical activity and work engagement among participants in the Northern Finland Birth Cohort. Their results showed that higher leisure-time physical activity and sports participation were associated with greater work engagement, while sedentary behaviour was associated with lower engagement, particularly vigour and absorption. Similarly, Kashima et al. (2026), using longitudinal data from 6,576 Japanese employees, found that initiating exercise was positively associated with subsequent work engagement, whereas discontinuing exercise was negatively associated with engagement. These studies support the observed positive association, although they primarily examined individual exercise habits rather than the provision of organisational fitness programmes. The present findings therefore extend this evidence by demonstrating the relevance of employer-supported fitness

opportunities in a remote industrial workplace.

The hierarchical regression results provided further evidence of the contribution of physical fitness programmes to employee engagement. Model 1, comprising age, gender and education, explained 46.0% of the variance in engagement (R^2 = .460; adjusted R^2 = .451). Following the inclusion of the wellness initiatives in Model 2, the explained variance increased by 27.0% (ΔR^2 = .270, $p < .001$), raising the adjusted R^2 to .722. Physical fitness programmes emerged as the strongest predictor among the three wellness initiatives, with a positive and statistically significant coefficient (B = 0.062, β = .355, $p < .001$). This indicates that, holding the other variables constant, a one-unit increase in the physical fitness programme score was associated with a 0.062-unit increase in the employee engagement score. The standardised coefficient further indicates that physical fitness programmes made the largest unique contribution among the three wellness predictors reported in the model.

The findings compare favourably with Karori (2023), who examined workplace wellness programmes at Old Mutual Kenya. The study found that physical fitness programmes had a positive and significant effect on employee engagement (β = .153, $p < .001$), explaining 7.5% of the variation in engagement. The positive coefficient obtained in the present study (β = .355) is larger, suggesting that physical fitness provision may have a particularly important contribution to engagement in the Wajir Power Station context. However, differences in organisational settings, measurement and model specification mean that the coefficients should not be interpreted as a direct comparison of programme effectiveness. The finding also supports Kiema-Junes et al. (2022) and Kashima et al. (2026), whose studies linked physical activity with higher work engagement. Unlike those studies, the present research specifically considered organisational fitness provision while controlling for other wellness initiatives and employee characteristics.

The regression findings can also be interpreted through the Job Demands–Resources Model developed by Bakker and Demerouti (2007). The model proposes that job resources stimulate employee motivation and engagement by helping employees manage work demands and achieve work goals. In the present study, accessible exercise facilities, organised fitness sessions and group activities may function as organisational resources that support employees' physical wellbeing and energy. This interpretation is relevant to Wajir Power Station because employees operate in an environment where shift schedules and demanding operational responsibilities may place considerable demands on their physical and psychological resources. The positive regression coefficient suggests that employees who perceive greater fitness provision also tend to report higher engagement. Nevertheless, the cross-sectional design does not establish that fitness programmes directly cause improvements in engagement.

Age remained positively and significantly associated with engagement in Model 2 (β = .118, p = .001), while gender (p = .407) and education (p = .145) were not statistically significant after the wellness initiatives were included. This suggests that the initial associations of gender and education with engagement were reduced after accounting for organisational wellness provision. The findings highlight the importance of considering workplace resources

alongside employee demographic characteristics when explaining engagement.

Conclusion

This study examined the relationship between physical fitness programmes and employee engagement at a remote thermal power station in Kenya. The findings revealed that employees who reported more favorable perceptions of physical fitness programme provision also reported higher levels of employee engagement. In both the correlation and regression analyses, physical fitness programmes demonstrated a positive and statistically significant association with engagement.

The study contributes to the limited body of evidence on workplace wellness and employee engagement within remote electricity-generation environments, where employees operate under demanding conditions characterized by shift work, geographical isolation, and limited access to external recreational facilities. Consistent with the Job Demands-Resources (JD-R) Model, the findings suggest that physical fitness programmes may function as organizational resources associated with higher employee engagement.

However, the results reflect employee perceptions collected from a single thermal power station at one point in time and should therefore be interpreted within that context. The study establishes a significant association rather than a causal relationship between physical fitness programmes and engagement.

Theoretical Implications

This study was guided by the Job Demands-Resources (JD-R) Model (Bakker & Demerouti, 2007), which posits that job resources enhance employee motivation and engagement by helping employees cope with work demands and achieve work-related goals. The findings provide support for the central proposition of the JD-R model by demonstrating a positive and statistically significant relationship between physical fitness programmes and employee engagement among employees working at a remote thermal power station.

The study found that employees who reported greater availability and accessibility of physical fitness programmes also reported higher levels of engagement. Within the JD-R framework, physical fitness programmes can be viewed as organizational resources that provide employees with opportunities to maintain their physical wellbeing, recover from work-related strain, and sustain the energy required to perform their duties. The positive association observed in this study suggests that workplace fitness facilities, organized exercise sessions, wellness activities, and health-related support may contribute to the motivational process described by the JD-R model.

The findings are particularly important because they extend the application of the JD-R model to a remote and shift-based operational environment. Employees at the thermal power station work under conditions characterized by continuous plant operations, rotating shifts, demanding technical responsibilities, and geographical isolation. Such conditions may increase physical and psychological job demands. The results suggest that organizational resources remain important predictors of employee engagement even in environments where employees experience substantial operational demands and limited access to external recreational opportunities.

However, the study measured employees' perceptions of physical fitness programme provision and

employee engagement at a single point in time. Consequently, while the findings are consistent with the JD-R model, they provide evidence of a significant association rather than definitive proof that physical fitness programmes directly cause higher engagement. Similarly, the study did not directly measure resource acquisition, resource recovery, or other psychological mechanisms proposed within the JD-R framework. Therefore, the results should be interpreted as supporting the theoretical expectations of the JD-R model rather than demonstrating the operation of its underlying motivational processes.

Managerial Implications

The findings indicate that physical fitness programmes are significantly associated with employee engagement and therefore have important implications for the management of remote thermal power stations. Given the operational demands and isolated nature of the study setting, management should view physical fitness programmes as an important component of workplace wellness initiatives that support employee wellbeing and engagement.

The descriptive results showed that employees valued fitness activities that were accessible within their working schedules. Management should therefore integrate fitness opportunities into existing shift arrangements without disrupting operational requirements. This can be achieved by scheduling exercise sessions before or after shifts, providing flexible access to fitness facilities throughout the day, and ensuring that employees from different shift rotations have equitable opportunities to participate.

The findings also indicate the importance of programme accessibility. Consequently, management should establish mechanisms for monitoring participation levels across departments and shift categories. Attendance records, facility utilization logs, and periodic employee feedback surveys can help identify groups of employees who may face barriers to participation and allow appropriate adjustments to programme delivery.

Although employees generally reported positive perceptions of physical fitness programmes, periodic health screening received comparatively lower ratings than other programme components. Management should therefore strengthen connections between health screening activities and follow-up support. Employees should receive confidential feedback on screening results together with appropriate referrals, health advice, and follow-up interventions where necessary. This would increase the practical value of screening programmes and enhance employees' perceptions of organizational support.

Management should also conduct periodic assessments of employee wellness needs to determine whether existing fitness programmes remain relevant and accessible. Regular employee consultations and wellness surveys can help identify changing needs, preferred activities, and participation barriers, thereby supporting continuous programme improvement.

The study findings directly support recommendations relating to the provision, accessibility, scheduling, and evaluation of physical fitness programmes. However, broader recommendations concerning wellness budgeting and programme expansion should be implemented cautiously. Any additional investments should be based on demonstrated employee needs, programme utilization levels, available resources, and periodic evaluations of

programme effectiveness to ensure efficient use of organizational resources.

Limitations and Future Research

Several limitations should be considered when interpreting the findings of this study. First, data on both physical fitness programmes and employee engagement were collected using self-report questionnaires from the same respondents. Although confidentiality was assured and standardized procedures were followed during data collection, the possibility of common method bias cannot be completely ruled out. The use of a single data source may have contributed to stronger observed relationships between the study variables.

Second, the study may have been affected by social desirability bias. Because respondents were evaluating programmes provided by their employer, some employees may have provided more favorable responses regarding workplace fitness initiatives or their own engagement levels. Such responses could influence the magnitude of the observed relationships.

Third, while a census approach was employed, census studies do not eliminate measurement error or response bias. Although the study achieved a relatively high effective response rate of 80.0%, the possibility of non-response bias remains. Employees who did not participate may have differed from respondents in their experiences of workplace fitness programmes or levels of engagement.

Fourth, the cross-sectional design limits causal interpretation. The findings establish a significant relationship between physical fitness programmes and employee engagement, but they do not confirm the direction of that relationship. It is possible that highly engaged employees are more likely to participate in available fitness activities or perceive organizational wellness initiatives more positively than less engaged employees. Consequently, reverse causality cannot be excluded.

Fifth, although the reliability coefficients for physical fitness programmes ($\alpha = .721$) and employee engagement ($\alpha = .753$) exceeded the recommended threshold of 0.70, they indicate moderate rather than exceptionally high internal consistency. As a result, some measurement error may have influenced the strength of the observed relationships.

Future research should employ longitudinal designs to establish whether changes in physical fitness programme availability or participation are associated with subsequent changes in employee engagement over time. Comparative studies involving other remote power stations, electricity-generation facilities, and safety-critical organizations would also help determine whether the findings are generalizable beyond the study site.

Further studies should examine actual participation frequency, programme quality, and utilization patterns rather than focusing solely on perceptions of programme provision. Future researchers may also investigate the separate dimensions of employee engagement, namely vigour, dedication, and absorption, to determine whether physical fitness programmes influence these dimensions differently.

Finally, future research should examine variables that may explain or influence the relationship between physical fitness programmes and employee engagement. Potential factors include perceived organizational support, supervisory support, fatigue, recovery experiences, and work-life balance. Such studies would provide a deeper understanding of the mechanisms

through which workplace fitness initiatives relate to employee engagement in remote operational environments.

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