

FREQUENCY OF SPORTS PARTICIPATION IS NOT ASSOCIATED WITH ACADEMIC PERFORMANCE: EVIDENCE FROM TEACHER TRAINING COLLEGES IN WESTERN KENYA

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Abstract

Teacher training colleges in Kenya's Western Region have consistently performed well in national sports competitions. However, a significant proportion of trainees fail the qualifying examinations. Whether the frequency of sports participation contributes to this pattern remains unclear. This study aimed to determine whether a statistically significant relationship exists between the frequency of participation in sports-related co-curricular activities and the academic performance of teacher trainees in Western Kenya. A cross-sectional research design was employed. Of the total sample size of 343 trainees, 124 were drawn from Kibabii, 104 from Eregi, and 115 from Ugenya. The respondents completed a self-administered questionnaire. Content validity was established through a review by two subject-matter experts in physical education and educational measurement. Internal consistency reliability was assessed using Cronbach's alpha, which yielded a coefficient of 0.73, exceeding the recommended threshold of 0.70. Participation in sporting activities was categorized as 'five times a week or more', 'three to five times a week', and 'twice a week or less.' Academic performance was classified as Distinction, Credit, or Pass. A chi-square test of independence was applied at a significance level of $p < .05$. No statistically significant relationship was found between the frequency of sports participation and academic performance among participants, $\chi^2(4, N = 298) = 0.46, p = .977$; among non-participants, $\chi^2(4, N = 45) = 1.24, p = .872$; or in the full sample, $\chi^2(4, N = 343) = 0.24, p = .993$. The null hypothesis was therefore retained. The distributions of Distinction, Credit, and Pass were nearly identical across all three frequency levels. The findings suggest that the frequency of sports participation is not significantly associated with academic performance among teacher trainees. Teacher training institutions should focus on co-curricular frameworks that prioritize the quality and intensity of engagement over the number of sessions per week.

Keywords: academic performance, FITT principle, sports participation, teacher training colleges

Introduction

In 2019, media reports citing official examination data indicated that 46% of teacher trainees in Kenya failed their qualifying examinations, with some institutions recording failure rates exceeding 50% (Oduor, 2019). In the same year, colleges from the Western Region of Kenya finished among the top two in the national college sports championships (KTCSA, 2019). The coexistence of high sports achievement and high academic failure in the same region raises a direct question. Does frequent sports participation detract from academic performance, or is the relationship more complex than that?

It is assumed that sports participation has a negative effect on academic performance (Pinto-Escalona et al., 2022). The logic is simple: time on the pitch is time off studying for the student. However, this assumption has not been consistently supported by the empirical literature. Kuroda et al. (2023) and Pagani et al. (2024) found that athletes also performed

well academically. Research conducted by Abruzzo et al. (2016) found that involvement in sports and other activities did not hinder academic success and, in fact, helped students to perform better academically. More recently, Zurc and Planinšec (2022) found that the frequency and intensity of physical activity were positively associated with the academic performance of primary school learners in Slovenia. However, neither the type of leisure activity nor the time spent on it was a significant predictor.

Sports participation is not a single uniform behavior. According to the Frequency, Intensity, Time, and Type (FITT) principle, physical activity is a complex, multidimensional construct. The FITT principle is a useful framework that provides a system for isolating the dimensions that can shape or influence a given outcome (Zurc & Planinšec, 2022). This lens was employed by Prasad (2012) in a study of university students in New Zealand. He found that the frequency and duration of weekly sports involvement were positively associated with the mean academic grades. Muhammad et al. (2021), studying secondary school students in Pakistan, found that students who engaged in co-curricular activities more regularly performed better academically than those who did not.

However, not all evidence points in the same direction. While studying high school students in Massachusetts, McCarthy (2021) found that any athletic advantage was small and inconsistent. According to Pickens (2020), male athletes had a cumulative GPA similar to that of non-athletes. Although Wretman (2017) did not evaluate frequency as a distinct variable, he found a significant correlation between sports involvement and academic performance in a sample of students from North Carolina. Wretman's analysis suggests a methodological critique: to make precise statements, intensity and time must be clearly differentiated from frequency as an independent variable.

There is scant evidence for teacher trainees in Kenya. Kamau et al. (2015) demonstrated that participation in competitive sports enhances school connectedness among secondary school students in Kenya, although the frequency of participation was not isolated as a variable. Carney et al. (2019) found comparable links in a different institutional context. Nyabero and Ngeywo (2018) reported that co-curricular activities broadly influenced academic performance in Uasin Gishu County secondary schools, but the frequency dimension was not examined independently. No published study has tested whether the number of times teacher trainees participate in sports per week is associated with their end-of-year academic performance.

This gap is significant for two reasons. The context for diploma teacher trainees is that a well-defined institution offers academic and co-curricular programmes. The time pressure, academic responsibilities, and sporting scene of student-athletes are quite different from those of secondary school or undergraduate students. However, direct inferences cannot be made from these populations. The findings from other populations may not be directly applicable. In addition to designing evidence-based co-curricular frameworks under Kenya's Competency-Based Curriculum, college administrators and curriculum planners need credible data identifying which dimension of sports participation, if any, drives academic outcomes.

This study is framed by the bioecological theory of human development (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 2007). According to this theory, development results from repeated interactions between learners and the environment. Participation in sports regularly involves what Bronfenbrenner calls a proximal process: a well-structured, repetitive

engagement with or impact on the surrounding environment. More frequent proximal processes are hypothesized to yield stronger developmental effects than less frequent ones. This study empirically tested this prediction. If frequency does not predict academic outcomes, then the mechanism linking sports to academic development must lie elsewhere in the FITT framework. According to the theory, trainees who participate more often should perform better academically if the participation frequency functions as expected. If it does not, then the frequency dimension of sports engagement is not the mechanism through which sports influence academic outcomes, and attention must turn to other dimensions of the FITT framework.

Objective of the Study

This study sought to determine the relationship between the frequency of participation in sports-related co-curricular activities and the academic performance of teacher trainees at public training colleges in Western Kenya.

Hypothesis of the Study

H₀: There is no statistically significant relationship between the frequency of participation in sports-related co-curricular activities and the academic performance of teacher trainees in the Western Region, Kenya.

Materials and Methods

This study employed a cross-sectional research design, which implies a relationship among variables at a given point in time without manipulation of the variables (Fraenkel et al., 2012). The design was appropriate because both sports participation and academic performance are pre-existing characteristics of the trainees, not outcomes that can be experimentally assigned or controlled.

Data were collected from three public teacher-training colleges in Kenya's Western Region: Kibabii, Eregi, and Ugenya. These colleges were selected because they all provide the four training programs under consideration: Diploma in Primary Teacher Education (DPTE), Diploma in Secondary Teacher Education (DSTE), Diploma in Early Childhood Teacher Education (DECTE), and Diploma in Teacher Education (DTE). The target population comprised 2,450 diploma-level teacher trainees enrolled in the three colleges.

The sample size was determined using Yamane's (1973) formula: $n = N / (1 + Ne^2)$, where n is the required sample size, N is the total population (2,450), and e is the margin of error (0.05). This yielded a minimum sample size of 343 trainees in this study. The sample was subsequently allocated proportionately across the three colleges in relation to each college's trainee population. Within each college, simple random sampling was applied: all eligible trainees were assigned numbers and selected using a random number generator, ensuring that each trainee had an equal probability of inclusion.

Data were collected using a self-administered sports-related activity questionnaire developed by the researcher. The instrument collected trainee demographics, sports involvement status (participant or non-participant), and four activity characteristics: frequency, intensity, duration, and type. Academic performance was measured using trainees' self-reported end-of-year grades, categorized as Distinction (70-100%), Credit (50-69%), or Pass (40-49%). While

official transcript verification was beyond the scope of this study, self-reported grades in similar institutional settings have been shown to yield reasonably accurate data when respondents are assured confidentiality (Kuncel et al., 2005). The frequency of participation was categorized as five times a week or more, three to five times a week, and twice a week or less.

The questionnaire was designed using Google Forms and shared with selected trainees via mobile phone links. Each respondent completed the form under supervision in approximately 20 minutes. The instrument was piloted at Lugari (DSTE) and Kaimosi (DTE, DPTE, and DECTE) colleges, both of which were outside the main study area. The pilot study involved 40 trainees, 20 participants, and 20 non-participants. Internal consistency was assessed using Cronbach's alpha, yielding a coefficient of 0.73, which exceeded the recommended threshold of 0.70 (Boateng et al., 2018). Two subject-matter experts in physical education and educational measurement reviewed the instrument for content relevance and representativeness of the items.

Data were transferred from Google Forms to Microsoft Excel and then imported into IBM SPSS Statistics Version 27. Trainee profiles were described using frequency distribution tables. Chi-square tests of independence were used to determine whether distributions of academic performance outcomes differed significantly across frequency categories. Because participation frequency is meaningful only for those who actually participate in sports, this analysis was conducted exclusively for the participant group ($n = 298$) and the full sample ($n = 343$). The non-participant group ($n = 45$) was excluded from the frequency analysis because they reported no sports participation. The significance level was set at $p < .05$.

The Kenyatta University Ethics Review Committee and the National Commission for Science, Technology, and Innovation (NACOSTI) provided ethical permission for the study. County directors of education and principals were granted institutional access. Before the data collection exercise, each trainee provided signed informed consent. Participation was entirely voluntary, and all data were kept confidential.

Results and Discussion

Of the 343 trainees who completed the questionnaire, 298 (86.9%) were sports participants, and 45 (13.1%) were non-participants. Female trainees accounted for 59.2% of the sample, while male trainees accounted for 40.8%. The majority (55.7%) were aged 19-22. DPTE was the largest category, accounting for 48.7% of the sample, followed by DSTE, which accounted for 32.1%. These proportions reflect the actual distribution of trainees among the three institutions and training programs in the study.

The majority of the 298 participants ($n = 126$, 42.3%) participated three to five times a week. The next largest group engaged 2 or fewer times per week ($n = 102$, 34.2%), whereas 70 trainees (23.5%) engaged more than five times per week. This distribution is expected in an institutional co-curricular context because participation scheduling is determined by both the college calendar and facility availability rather than solely by preferences.

Table 1

Cross-tabulation of Frequency of Sports Participation and Academic Performance (Participants, n = 298)

Frequency of Participation	Credit n (%)	Distinction n (%)	Pass n (%)	Total n (%)
More than 5 times per week	37 (52.9%)	30 (42.9%)	3 (4.3%)	70 (100%)
3-5 times per week	72 (57.1%)	49 (38.9%)	5 (4.0%)	126 (100%)
2 times or less per week	57 (55.9%)	40 (39.2%)	5 (4.9%)	102 (34.2%)
Total	166 (55.7%)	119 (39.9%)	13 (4.4%)	298 (100%)

Note. Academic performance: Distinction = 70-100%; Credit = 50-69%; Pass = 40-49%.

Table 1 presents the distribution of academic performance in each frequency group. Among trainees who participated more than five times per week, 52.9% earned Credit, 42.9% earned Distinction, and 4.3% earned Pass. Among those who participated three to five times per week, 57.1% earned a Credit, 38.9% a Distinction, and 4.0% a Pass. For trainees who participated twice a week or less, 55.9% earned Credit, 39.2% earned Distinction, and 4.9% earned Pass. The grade distributions across the three frequency groups were remarkably consistent. No consistent pattern emerged as the frequency increased or decreased. A trainee who participated more than five times per week was no more likely to earn a distinction than one who participated twice a week or less.

Table 2

Chi-Square Test Results: Frequency of Sports Participation and Academic Performance

Group	χ^2 Value	df	p-value	N
Participants	0.46	4	.977 ns	298
Non-participants	1.24	4	.872 ns	45
Full sample	0.24	4	.993 ns	343

Note. ns = not significant at $p < .05$ level (two-tailed). df = degrees of freedom.

The statistical results in Table 2 confirm the pattern observed in the cross-tabulation. The chi-square test yielded non-significant results for all three groups: participants ($\chi^2(4, N = 298) = 0.46, p = .977$), non-participants ($\chi^2(4, N = 45) = 1.24, p = .872$), and the total sample ($\chi^2(4, N = 343) = 0.24, p = .993$). The null hypothesis was therefore retained in this case. These are not borderline results. A p-value of .993 indicates that the observed distribution of grades across frequency groups is virtually indistinguishable from what would be expected under the null hypothesis. In this sample, the frequency of sports participation was not significantly associated with academic performance.

This finding stands in contrast to several prior studies that reported a positive association between sports participation frequency and academic performance. Context has a

considerable impact on the relationship under study. Prasad (2012), studying university students in New Zealand, found that the frequency and duration of weekly sports involvement were positively associated with academic performance. Muhammad et al. (2021) reported similar patterns among secondary school students in Pakistan, where more frequent co-curricular engagement correlated with higher academic performance. Nonetheless, both investigations were conducted outside teacher-training colleges and used distinct measures to assess academic achievement, which may affect the generalizability of their findings. At a typical university, students have far more control over when and how often they participate in sports activities. Thus, variations in frequency are more likely to reflect individual differences in motivation, commitment, and discipline, all of which may drive academic accomplishment independently. A teacher training college's co-curricular program is scheduled institutionally. Participants are limited to specified time intervals, which means that the actual frequency variation is determined by the college calendar rather than personal preferences. Without true variance, determining the presence or absence of a link becomes more difficult, especially when a relationship exists.

The second interpretation stems from the FITT architecture. Frequency is defined as the participation count. Assume that two trainees participate five times a week. One engages in moderate-intensity exercise in a formal, structured, and competitive environment that necessitates concentration, collaboration, and self-control. The other trainee participated at low intensity in an informal, unstructured setting. The frequency remained constant, and any academic advantage was unlikely to be significant. The key findings of this study corroborate this claim.

According to the Bioecological Theory of Human Growth, the quality and structure of proximal processes dictate the trajectory of growth over time. The frequency of trainees' participation in sports was a proximal process. The theory's prediction, however, does not hold for academic performance in this study. The interpretation within the bioecological paradigm is that proximal activities yield developmental gains only when they are of adequate quality and structural richness. Bronfenbrenner and Morris (2007) argued that for proximal processes to be developmentally effective, they must become progressively more complex over time, involve active engagement with the environment, and occur on a regular basis. Frequency alone addresses only the third of these conditions. In the absence of growing complexity and active involvement, greater session frequency becomes a question of rote repetition rather than developing new competencies. This is consistent with Bradley and Conway (2016) and the dual-step transfer model, which holds that the academic benefits of sports-based activities depend on whether the activity has the potential to develop transferable skills, not on how frequently it is performed.

Fredricks (2012) investigated the overscheduling hypothesis regarding the influence of extracurricular engagement on academic achievement and discovered no consistent positive or negative effects. The essential component was the students' participation. Along the same lines, when examining African American female high school athletes in Georgia, Singleton (2016) found few differences between athletes and non-athletes. McCarthy (2021) reported comparable findings for high school students in Massachusetts. When combine together, these findings imply that the involvement level is a poor predictor across a wide range of populations and contexts. The present findings are in line with this trend.

In practical terms, the null finding carries a clear message for the co-curricular policy. The present evidence does not support the frequency of sports participation as a reliable indicator

of academic performance and success among teacher trainees. Policies that set session-count targets as a proxy for academic benefit are therefore not well supported by this data. The broader FITT findings from this study suggest that how trainees engage, particularly the intensity and structure of participation, may be more relevant to academic outcomes than the frequency of participation. A co-curricular framework that focuses on the quality and organization of sports engagement rather than the number of sessions per week appears to be more consistent with the evidence. However, given the cross-sectional design, causal conclusions cannot be drawn, and these observations should be treated as preliminary policy directions, rather than definitive prescriptions.

It is also important to discuss what the null result does not imply. This does not imply that regular sports engagement is time-efficient. Trainees who participate more than five times per week devote significant hours to co-curricular activities. If these hours do not result in an academic disadvantage, it is possible that these trainees have established adequate time management skills or that the collegiate academic burden in these programs allows for this level of dedication. Future studies, such as those using time-use diaries or objective tracking of study and activity time, could help explain this. Furthermore, this study views academic performance as an end-of-year grade. Different dimensions of academic engagement, such as how frequently students' complete assignments, their attendance in class, and their performance in specific subjects, may vary depending on their level of sports participation in sports events.

Conclusions and Recommendations

This study investigated the relationship between the frequency of sports participation and academic achievement among teacher trainees in Western Kenya. The null hypothesis was tested using chi-square tests on a proportionate random sample of 343 trainees from three public teacher-training colleges. The null hypothesis was retained across all three analytical groups. For the complete sample, $\chi^2(4, N = 343) = 0.24, p = .993$. The distribution of Distinction, Credit, and Pass grades was nearly identical regardless of whether trainees participated in sports more than five times per week, three to five times per week, or twice per week or less.

These findings have direct significance for policy and practice. Under Kenya's Competency-Based Curriculum, teacher training institutes are required to provide comprehensive learner development, including through organized co-curricular activities. However, holistic development is not achieved by simply increasing the frequency of participation. The findings indicate that training institutes should modify their co-curricular frameworks, emphasizing quality and engagement intensity over the overall number of sessions. Future co-curricular frameworks should prioritize the quality and structure of engagement over frequency alone. This direction is consistent with the broader FITT-based literature and warrants direct empirical testing in teacher training contexts to establish it as evidence-based guidance.

The following recommendations are derived from these findings. Institution leaders and teacher trainers should shift their co-curricular frameworks away from tracking the number of sessions per week and instead focus on the quality and structure of sports engagement. Policymakers should avoid setting participation targets based on frequency counts alone, as such targets are insufficient proxies for the academic impact of co-curricular programmes. Future research should employ longitudinal designs that track changes in frequency,

intensity, and type of sports participation alongside academic performance across a trainee's full diploma period. Multivariate regression analyses that simultaneously adjust for demographic variables, such as age, year of study, and marital status, would also help isolate the independent impact of each FITT dimension more precisely.

This study has several limitations. First, both frequency of participation and academic performance data were self-reported, which may introduce recall error or social desirability bias. Future studies should verify grades directly from official college records. Second, the cross-sectional design identifies associations between variables but cannot establish the direction of causality. Second, the study did not adjust for covariates such as age, marital status, year of study, and the training category. This means that the null result should be interpreted with caution. Third, academic performance was measured using a three-level ordinal scale rather than continuous grades, thereby reducing sensitivity to finer performance differences. Ordinal logistic regression or continuous GPA data could strengthen future analyses. Finally, the sample was limited to three colleges in Western Kenya, further limiting the capacity to generalize the findings. These design shortcomings should inform future studies.

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