

The Effect of Traditional Games on Students Physical Fitness Levels

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Abstract

This study aims to determine the effect of traditional games on the level of physical fitness of students at SMK Terpadu Jannatul Firdaus, Ngawi Regency. The study used a quantitative approach with a quasi-experimental design method of non-randomized control group pretest-posttest design. The sample consisted of 40 students of grades X and XI who were divided into an experimental group (using the gobak sodor game) and a control group (regular physical exercise). Data were collected through the Nusantara Student Fitness Test (TKPN) and analyzed using a paired sample t-test. The results showed that there was a significant difference between the pretest and posttest scores in the experimental group ($p < 0.05$), which indicated that traditional games had a positive effect on improving students' physical fitness. This finding confirms that the integration of traditional games in physical education learning can be an effective and enjoyable alternative to improve students' physical fitness.

Introduction

Physical education is a basic science that is important for education. As a result, educational programs that include health education, athletics, and sports are very important. A previous study (Haris et al., 2024), shows that physical education improves students' learning outcomes in schools. And according to other studies (Fauzi et al., 2023), physical activity improves students' health and well-being. Thus, the purpose of integrating physical education, health, and recreation into the classroom is to improve students' academic achievement, physical activity, and well-being.

Physical education is a series of educational activities aimed at improving the physical, cognitive, emotional, perceptual, neuromuscular, and organic abilities of each student (Shimon, 2025; Fizi et al., 2023; Putri et al., 2023; Hasbullah et al., 2021; Widodo et al., 2023). Students should learn about health and recreation at school. This should encourage their cognitive, affective, and psychomotor development. These domains have both theoretical and practical applications are taught about physical exercise and resources to support their health. As stated by Spiering et al. (2021), maintaining optimal physical health is necessary so that the body can perform physical activities consistently over a long period of time without experiencing significant fatigue.

Therefore, it is very important to improve the physical health of students, especially those who are in school. This is in line with the opinion of Samsudin in (Setiawan et al., 2024), which states that physical fitness training will significantly improve the performance of school students in their daily activities, both inside and outside the school. When working on

routine tasks, highly active students tend not to feel tired, weak, or sleepy. This is in accordance with research on the relationship between physical fitness and healthy students (Sepriani et al., 2024; Anokha & Kachi, 2025; Vilchez et al., 2021; Ng et al., 2021), who found that healthier students have better physical health and better learning abilities because they can meet their physical needs and increase their desire to learn and mental concentration.

The goal of physical education is to promote balanced growth and development through improving motor skills, physical abilities, knowledge, and reasoning, as well as implementing a healthy lifestyle through sports and physical activity (Pinto, 2023). A person's fitness level indicates how ready they are to participate in physical activity. School students are still lacking in fitness. This is in line with research by Taylor et al. (2022) showed that students had moderate levels of physical fitness, well above the ideal limits expected to allow them to participate in activities without fatigue.

Based on observations and interviews with the principal, class teachers, and PJOK teachers of SMK Jannatul Firdaus, it was found that most students have low levels of physical fitness. This can be seen from the lack of stamina when taking physical education lessons or during lessons in class, students easily get tired when doing physical activities, and when exercising students are not enthusiastic about participating.

On the other hand, the implementation of PJOK learning in schools is less varied, this makes students feel bored. Schools must provide physical education based on the principle of improving fitness, with a minimum of three weekly meetings. The 2013 Curriculum, however, contradicts this principle by only providing physical education three times a week for 35 minutes. with one meeting. As a result, to improve the effectiveness of learning, physical education teachers must understand the characteristics and needs of their students (Kirch et al., 2021). Schools must implement new strategies for physical education, including physical activity.

Physical activity can improve motor skills, physical endurance, and cognitive and affective development (Latino & Tafuri, 2024; Hill et al., 2024). Therefore, physical education teachers can use game-based physical activities to improve student learning outcomes and improve their own learning outcomes. Children often play, which can developed (Hsiao & Chen, 2016; Miller et al., 2026). Playing improves children's physical, mental, and social abilities gradually. The heart, blood vessels, lungs, muscles, bones, joints, and body metabolism can be improved by playing (Liu et al., 2024; Mileva & Zaidell, 2022; Kadam, 2025).

The students' fitness level is expected to improve. However, students started to feel tired and asked for a break after the lesson started at 7:00 am. They also often asked for a break during the flag ceremony because they were tired during the learning process. This shows that students still have a lack of fitness, which requires further attention. Students who are healthy enough will not get tired when studying general subjects.

Students should be monitored, protected, and improved if they lack fitness. The author found that the physical health of students at SMK Terpadu Jannatul Firdaus in Ngawi Regency was lacking. After class, many students felt tired and did not play or exercise. Consequently, the author's purpose was to investigate how traditional games impacted the physical fitness of students at SMK Terpadu Jannatul Firdaus in Ngawi Regency.

Methods

This research was conducted at SMK Terpadu Jannatul Firdaus, Kedunggalar District, Ngawi Regency, during April to May 2025 in the 2025/2026 academic year. The study used a quantitative approach with a quasi-experimental design method of the non-randomized control group pretest-posttest design type . The subjects of the study consisted of 40 students of grades X and XI who were taken by cluster random sampling . The sample was divided into two

groups, namely the experimental group which was given treatment in the form of the traditional gobak sodor game and the control group which was not given treatment. Data were collected through the Nusantara Student Fitness Test (TKPN) which included BMI, V Sit and Reach, 60-second Sit Up, 30-second Squad Thrust, and Pacer, which were carried out before and after treatment.

Data analysis was conducted through normality test to ensure data distribution, and t-test (paired sample t-test) to determine the significant effect of traditional games on students' physical fitness. This test is used to compare the average pretest and posttest scores in each group. The posttest results which were significantly higher than the pretest in the experimental group indicated a positive effect of the gobak sodor game on improving physical fitness. The testing criteria were set at a significance level of 0.05, and the results of this study are expected to contribute to the development of fun and effective physical education learning methods through traditional games.

Result and Discussion

The description of the data presented from this study is to provide an overview of the distribution of research data obtained, so that it is easier to understand. The data obtained are the results of the pre-test and post-test of the influence of traditional games on the level of physical fitness of students at SMK Terpadu Jannatul Firdaus Kedunggalar, this data description is one part of the researcher's report that provides an overview of the research data that has been collected.

This study was used to test the hypothesis that has been put forward, namely whether there is an influence of traditional games on the level of physical fitness of students at the Jannatul Firdaus Kedunggalar Integrated Vocational School.

Nusantara Student Fitness Test Instrument Test

SPSS Validity Test

The validity test conducted on 5 physical fitness indicator items was marked with Y1 (BMI), Y2 (V Sit And Reach), Y3 (Sit Up 60 Seconds), Y4 (Squat Thrush), and Y5 (Pacer).

Table 1. Instrument Test

1. Correlations							
2.		3. Y1	4. Y2	5. Y3	6. Y4	7. Y5	8. TOT AL
9. Y1	10. Pearson Correlation	11. 1	12. .089	13. .302	14. .031	15. .053	16. .525* *
17.	18. Sig. (2- tailed)	19.	20. .585	21. .058	22. .852	23. .744	24. .001
25.	26. N	27. 40	28. 40	29. 40	30. 40	31. 40	32. 40
33. Y2	34. Pearson Correlation	35. .089	36. 1	37. .013	38. .024	39. .043	40. .465* *
41.	42. Sig. (2-tailed)	43. .585	44.	45. .938	46. .881	47. .793	48. .003
49.	50. N	51. 40	52. 40	53. 40	54. 40	55. 40	56. 40
57. Y3	58. Pearson Correlation	59. .302	60. .013	61. 1	62. .171	63. .298	64. .787* *
65.	66. Sig. (2-tailed)	67. .058	68. .938	69.	70. .292	71. .062	72. .000
73.	74. N	75. 40	76. 40	77. 40	78. 40	79. 40	80. 40
81. Y4	82. Pearson Correlation	83. .031	84. .024	85. .171	86. 1	87. .015	88. .397* *
89.	90. Sig. (2-tailed)	91. .852	92. .881	93. .292	94.	95. .928	96. .011

97.	98. N	99. 40	100. 40	101. 40	102. 40	103. 40	104. 40
105.	106.	107.	108.	109.	110.	111.	112.
113. Y 5	114. Pearson Correlation 115. 116. Sig. (2-tailed) 117.	118. .05 3 119. 120. .74 4	121. .04 3 122. 123. .79 3	124. .29 8 125. 126. .06 2	127. .01 5 128. 129. .92 8	130. 1	131. .341 132. 133. .032
134.	135. N	136. 40	137. 40	138. 40	139. 40	140. 40	141. 40
142. T OTA L	143. Pearson Correlation 144. 145. Sig. (2-tailed) 146. 147. N 148.	149. .52 5** 150. 151. .00 1 152. 153. 40	154. .46 5** 155. 156. .00 3 157. 158. 40	159. .78 7 160. 161. .00 0 162. 163. 40	164. .39 7 165. 166. ,01 1 167. 168. 40	169. .34 1 170. 171. .03 2 172.	174. 1 175. 176. 177. 178. 40 173. 40

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

the validity test results table above, the five indicators has a calculated r value that is greater than r table (r table with 1% significance = 0.312). Indicator Y1 has a total value of $0.525 > 0.32$. Indicator Y2 has a total value of $0.465 > 0.312$. Indicator Y3 has a total value of $0.787 > 0.312$. Indicator y4 has a total value of $0.397 > 0.312$. Indicator Y5 has a total value of $0.341 > 0.312$. The conclusion obtained from the five indicators used can be said to be valid. The five indicators also have a significance value (2-tailed) of less than 0.05, which is 0.00 so that all indicators can be said to be valid.

Reliability Test

According to Kurniawan & Puspitaningtiyas (2016:97) reliability test is a test conducted to determine the reliability (level of confidence) of a question item in measuring the variables studied. A research instrument can have a high level of confidence if the results of the instrument test show relatively consistent results. According to Siregar (2013:55) reliability test is to determine the extent to which the measurement results remain consistent if measurements are taken twice or more against the same symptoms using the same measuring instrument. Sudayana (2016:69) said that the reliability of a research instrument is a tool that provides consistent results. This means that the measurement results remain the same even though they are given to the same subject by different people, at different times and in different places. Thus, the problem of instrument reliability is related to the problem of accuracy of the results.

Table 2. Reliability Test Results

179. Reliability Statistics	
180. Cronbach's Alpha	181. N of Items
182. . 792	183. 10

Based on the results of the reliability test obtained using the Cronbach Alpha formula of 0.792. So it can be concluded that the instrument used in this study is a high reliability category and can be used to measure "The Effect of Traditional Games on the Level of Physical Fitness of Students of Integrated Vocational School Jannatul Firdaus Kedunggalar, Ngawi Regency". The following is an interpretation of the research instrument as a guideline in the reliability test

Table 4.3 Interpretation of Reliability Test

184. Reliability Test Results	185. Reliability Description
186. 0.00-0.60	187. Not Reliable
188. 0.60-0.79	189. Reliable
190. 0.80-1.00	191. Very Reliable

(Ghozali 2016,2021)

Indonesian Student Fitness Test Results Data

The data obtained after the researcher conducted tests in the experimental and control groups at SMK Terpadu Jannatul Firdaus Kedunggalar regarding the development of students in completing the tests given using the traditional game of gobak sodor for the experimental class and physical exercise for the control class are as follows.

Table 4. Pretest and Posttest Values of Experimental Class

192.	193. N	194. Minimum	195. Maximum	196. Sum	197. Mean	198. Std. Deviation
199. Pretest	200. 20	201. 9	202. 12	203. 222	204. 11.10	205. .968
206. Posttest	207. 20	208. 12	209. 15	210. 279	211. 13.95	212. .945
213. Valid N 214. (listwise)	215. 20	216.	217.	218.	219.	220.

Table 5. Pretest and Posttest Values of Control Class

221.	222. N	223. Minimum	224. Maximum	225. Sum	226. Mean	227. Std. Deviation
228. Pretest	229. 20	230. 9	231. 12	232. 222	233. 11.10	234. .968
235. Posttest	236. 20	237. 10	238. 15	239. 260	240. 13.00	241. 1.076
242. Valid N 243. (listwise)	244. 20	245.	246.	247.	248.	249.

Pretest results of the experimental and control students showed that the minimum score of 40 students was 9 and the maximum score was 12 with the total score of students being 222 , the average score was 11.10 with a standard deviation of 0.968 . While the posttest results of students who received treatment and control the minimum score was 40. students are 12 and 10 and the maximum value is 15 with the total number of students' scores being 2 79 and 260, the average value is 13.95 and 13.00 with standard deviations of 0.945 and 1.076 . So there is a significant difference between the values before being given treatment and the values after being given treatment , and there is a comparison between students who receive treatment and control students.

Table 6. Frequency distribution of observation data for the Nusantara Student Fitness Test pretest

250.	251.	252. frequency	253. Percent	254. Valid Percent	255. Cumulative Percent
256. Valid	257. 9	258. 4	259. 10.0	260. 10.0	261. 10.0
262.	263. 10	264. 4	265. 10.0	266. 10.0	267. 20.0
268.	269. 11	270. 16	271. 40.0	272. 40.0	273. 60.0
274.	275. 12	276. 16	277. 40.0	278. 40.0	279. 100.0
280.	281. Total	282. 40	283. 100.0	284. 100.0	285.

The results of the distribution of the *pre-test* physical fitness level test for students showed that there were 4 students who got a score of 9.00 with a percentage of 10.0 %, 4 students get a score of 10.00 with percentage 10.0 %, 16 students get a score of 11.00 with a percentage of 40.0 % , and 16 The student got a score of 12.00 with a percentage of 40.0 % .

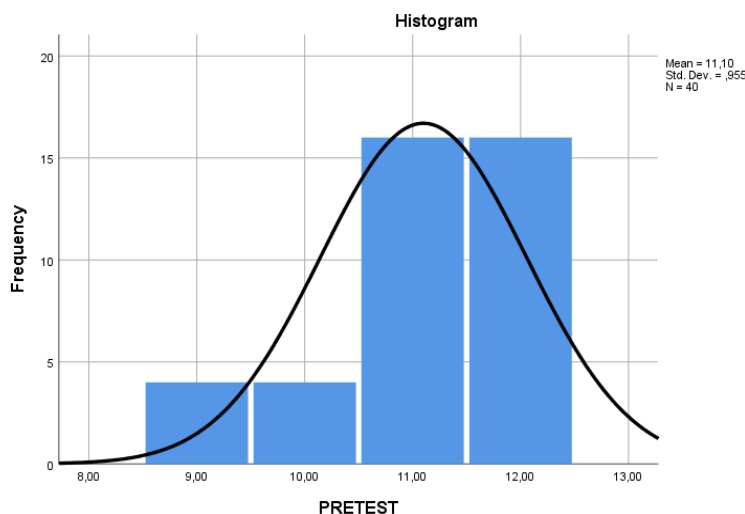


Figure 1. Histogram of the pretest of the Indonesian Student Fitness Test

The results of the histogram of the *pre-test* physical fitness test for students are related to the frequency distribution data of the observation data which shows that there are 4 students who got a score of 9.00 with a percentage of 10.0 %, 4 students get a score of 10.00 with a percentage 10.0 %, 16 students got a score of 11.00 with a percentage of 40.0 % , and 16 The student got a score of 12.00 with a percentage of 40.0 % .

Table 7. Frequency distribution of observation data for the Nusantara Student Fitness Test post-test

286.	287.	288. frequency	289. Percent	290. Valid Percent	291. Cumulative Percent
292. Valid	293. 10	294. 1	295. 2.5	296. 2.5	297. 2.5
298.	299. 12	300. 5	301. 12.5	302. 12.5	303. 15.0
304.	305. 13	306. 15	307. 37.5	308. 37.5	309. 52.5
310.	311. 14	312. 11	313. 27.5	314. 27.5	315. 80.0
316.	317. 15	318. 8	319. 20.0	320. 20.0	321. 100.0
322.	323. Total	324. 40	325. 100.0	326. 100.0	327.

The results of the distribution of the physical fitness level test of *post - test students* show that there is 1 students who got a score of 10.00 with a percentage of 2.5 %, 5 The student got a score of 12.00 with percentage 12.5 %, 15 students got a score of 13.00 with a percentage of 37.5 % , 11 students got a score of 14.00 with a percentage of 27.5 % , and 8 students got a score of 15.00 with a percentage of 20.0%.

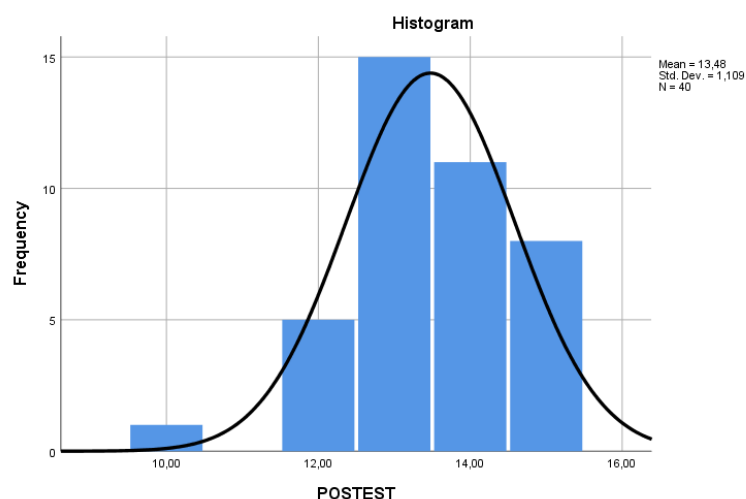


Figure 2. Histogram of post-test fitness test of Indonesian students

The results of the histogram of the physical fitness test of *post - test students* are related to the frequency distribution data of observation data which shows that there is 1 students who got a score of 10.00 with a percentage of 2.5 %, 5 students get a score of 12.00 with a percentage 12.5 %, 15 students got a score of 13.00 with a percentage of 37.5 % , 11 students got a score of 14.00 with a percentage of 27.5 % , and 8 students got a score of 15.00 with a percentage of 20.0%.

Hypothesis Testing Results

Analysis of Fitness Test Scores of Nusantara Students of Jannatul Firdaus Integrated Vocational School

In this section, the researcher discusses the acquisition of Physical Fitness test scores using the Nusantara Student Fitness Test (TKPN) at SMK Terpadu Jannatul Firdaus Kedunggal, at the time of the initial measurement (*pretest*) for students who received the experiment and control and the final measurement (*posttest*) for students who received the experiment and control. The following are the results of the physical fitness hypothesis test of SMK Terpadu Jannatul Firdaus Kedunggal students.

Table 8. Results of the Experimental Pretest and Control of the Nusantara Student Fitness Test of Jannatul Firdaus Integrated Vocational School Students Experiment

328. No	329. Name	330. Imt	331. V Sit And Reach	332. Sit Up 60 Detik	333. Squat Thrust 30 Detik	334. Pacer	335. Amount
336. 1.	337. AFB	338. 3	339. 2	340. 2	341. 2	342. 2	343. 11
344. 2.	345. LIQ	346. 3	347. 2	348. 3	349. 2	350. 2	351. 12
352. 3.	353. M.NF	354. 3	355. 3	356. 2	357. 2	358. 2	359. 12
360. 4.	361. DFP	362. 3	363. 2	364. 3	365. 2	366. 2	367. 12
368. 5.	369. M.I	370. 3	371. 3	372. 2	373. 2	374. 2	375. 12
376. 6.	377. AV	378. 3	379. 2	380. 2	381. 2	382. 2	383. 11
384. 7.	385. YPP	386. 3	387. 2	388. 2	389. 2	390. 2	391. 11
392. 8.	393. AS	394. 3	395. 2	396. 2	397. 2	398. 2	399. 11
400. 9.	401. RAK M	402. 3	403. 3	404. 2	405. 2	406. 2	407. 12

408. 10	409. EI	410. 3	411. 2	412. 3	413. 2	414. 2	415. 12
416. 11	417. RR	418. 3	419. 2	420. 2	421. 3	422. 2	423. 12
424. 12	425. ISM	426. 3	427. 2	428. 1	429. 2	430. 2	431. 10
432. 13	433. CAR	434. 3	435. 2	436. 2	437. 2	438. 2	439. 11
440. 14	441. AK	442. 2	443. 2	444. 2	445. 2	446. 2	447. 10
448. 15	449. AN	450. 3	451. 2	452. 3	453. 2	454. 2	455. 12
456. 16	457. H	458. 3	459. 2	460. 2	461. 2	462. 2	463. 11
464. 17	465. M.IA M	466. 3	467. 2	468. 2	469. 2	470. 2	471. 11
472. 18	473. RAR	474. 3	475. 2	476. 2	477. 2	478. 2	479. 11
480. 19	481. NSA	482. 3	483. 2	484. 1	485. 1	486. 2	487. 9
488. 20	489. PRAS R	490. 2	491. 2	492. 1	493. 2	494. 2	495. 9

Table 9. Results of the Experimental Pretest and Control of the Nusantara Student Fitness Test of Jannatul Firdaus Integrated Vocational School Students Control

No	Nama	Imt	V Sit And Reach	Sit Up 60 Detik	Squat Thrust 30 Detik	Pacer	Jumlah
1.	M.RHA	3	2	2	2	2	11
2.	AU	3	2	3	2	2	12
3.	DVP	3	3	2	2	2	12
4.	M.AM	3	2	3	2	2	12
5.	RNH	3	3	2	2	2	12
6.	SSM	3	2	2	2	2	11
7.	VDS	3	2	2	2	2	11
8.	NMS	3	2	2	2	2	11
9.	FNS	3	3	2	2	2	12
10.	AKS	3	2	3	2	2	12
11.	BS	3	2	2	3	2	12
12.	ATR	3	2	1	2	2	10
13.	ADL	3	2	2	2	2	11
14.	KK 1	2	2	2	2	2	10
15.	KK 2	3	2	3	2	2	12
16.	M.RA	3	2	2	2	2	11
17.	MPR	3	2	2	2	2	11
18.	OAP	3	2	2	2	2	11
19.	WSS	3	2	1	1	2	9
20.	PDP	2	2	1	2	2	9

Based on the values at *the pretest* and control stages of the experiment with a total of 40 students students , the results of the Indonesian Student Fitness Test (TKPN) were obtained with the highest score being 12.00 and the lowest score being 9.00 .

Table 10. Results of the Posttest Experiment and Control Fitness Test of Nusantara Students of Jannatul Firdaus Integrated Vocational School Experiment

496. No	497. Name	498. Imt	499. V Sit And Reach	500. 60 Second Sit Ups	501. Squat Thrust 30 Seconds	502. Pacer s	503. Amou nt
504. 1.	505. AFB	506. 3	507. 2	508. 3	509. 2	510. 3	511. 13
512. 2.	513. LIQ	514. 3	515. 3	516. 3	517. 3	518. 2	519. 14
520. 3.	521. M.NF	522. 3	523. 3	524. 3	525. 2	526. 3	527. 14
528. 4.	529. DFP	530. 3	531. 3	532. 3	533. 3	534. 2	535. 14
536. 5.	537. MI	538. 3	539. 3	540. 3	541. 3	542. 2	543. 14
544. 6.	545. AV	546. 3	547. 2	548. 3	549. 2	550. 3	551. 13
552. 7.	553. YPP	554. 3	555. 3	556. 3	557. 3	558. 3	559. 15
560. 8.	561. AS	562. 3	563. 3	564. 2	565. 2	566. 2	567. 12
568. 9.	569. RAK M	570. 3	571. 3	572. 3	573. 3	574. 3	575. 15
576. 10	577. EI	578. 3	579. 2	580. 3	581. 2	582. 3	583. 13
584. 11	585. RR	586. 3	587. 3	588. 3	589. 3	590. 2	591. 14
592. 12	593. ISM	594. 3	595. 3	596. 2	597. 3	598. 2	599. 13
600. 13	601. CAR	602. 3	603. 3	604. 2	605. 3	606. 3	607. 14
608. 14	609. AK	610. 4	611. 2	612. 3	613. 3	614. 3	615. 15
616. 15	617. AN	618. 3	619. 3	620. 3	621. 3	622. 3	623. 15
624. 16	625. H	626. 3	627. 3	628. 3	629. 3	630. 3	631. 15
632. 17	633. M.IA M	634. 3	635. 3	636. 2	637. 3	638. 2	639. 13
640. 18	641. RAR	642. 3	643. 3	644. 2	645. 3	646. 2	647. 13
648. 19	649. NSA	650. 3	651. 3	652. 2	653. 4	654. 3	655. 15
656. 20	657. PRAS R	658. 4	659. 3	660. 2	661. 3	662. 3	663. 15

Table 11. Results of the Posttest Experiment and Control Fitness Test of Nusantara Students of Jannatul Firdaus Integrated Vocational School Control

No	Nama	Imt	V Sit And Reach	Sit Up 60 Detik	Squat Thrust 30 Detik	Pacer	Jumlah
1.	M.RHA	3	3	2	3	3	14
2.	AU	3	3	2	3	2	13
3.	DVP	3	2	2	3	3	13

4.	M.AM	3	3	2	3	3	14
5.	RNH	4	2	2	3	3	14
6.	SSM	3	2	3	3	2	13
7.	VDS	3	2	2	3	3	13
8.	NMS	3	2	3	2	3	13
9.	FNS	3	3	3	3	2	14
10.	AKS	3	2	3	3	2	13
11.	BS	4	2	3	2	3	14
12.	ATR	3	2	1	2	2	10
13.	ADL	3	2	2	3	3	13
14.	KK 1	3	2	2	2	3	12
15.	KK 2	3	2	2	3	2	12
16.	M.RA	3	2	3	2	3	13
17.	MPR	3	2	3	2	2	12
18.	OAP	3	3	3	3	3	15
19.	WSS	3	3	2	3	2	13
20.	PDP	3	3	2	2	2	12

Based on the values at *the post- test experimental* and control stages with a total of 40 students students , the results of the Indonesian student fitness test (TKPN) were obtained with details of the highest value of 15.00 and the lowest value of treatment 12.00 and control 10.00 .

Analysis of Pretest and Posttest Results

After *the pretest* and *posttest data* are obtained, the researcher compares the students who receive treatment and the students who receive control from *the pretest* and *posttest results* and then analyzes the data so that the research can find out carefully and precisely to test the specified hypothesis. The data analysis presented uses the t-test for small samples that are interrelated.

Normality Test

The data normality test in the study conducted on the experimental and control groups each used the *one sample Kolmogorov-Smirnove test statistic* which is related to the level of conformity between the distribution of observation scores, samples and their theoretical distribution. This test with the help of SPSS 2 5 software uses the provisions of Asymp, Sig> 0.05.

Table 12. Normality Test of Experimental and Control Classes

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Experiment	,145	40	,035	,933	40	,021
Control	,161	40	,011	,952	40	,086
a. Lilliefors Significance Correction						

The research data conducted on the experimental and control groups above using *the Kolmogorov-Smirnove* test statistics produced Asym. Sig (2-tailed) 0. 35 and 0.11 , which means that the significance value is greater than 0.05, meaning that the data is stated to be normally distributed, so that a t-test can be carried out to find the effect of traditional games on the level of physical fitness of students at the Jannatul Firdaus Kedunggalar Integrated Vocational School .

T-test

In accordance with the title and theoretical study that has been explained in the previous chapter in this study, the hypothesis test was conducted to determine the effect of traditional games on the level of physical fitness of students of SMK Terpadu Jannatul Firdaus Kedunggalar. Hypothesis testing with the help of SPSS 2.5 software is the *Paired Sample t-test*. With the following provisions.

If sig.(2-tailed) < 0.05 = Ho is rejected, Ha is accepted

If sig.(2-tailed) > 0.05 = Ho is accepted, Ha is rejected

Table 13. Paired Sample T Test Experiment

664. Paired Samples Test									
665.		666. Paired Differences					667.	668. f	669. Sig. (2-tailed)
		670. Mean	671. Std. Deviation	672. Std. Error Mean	673. 95% Confidence Interval of the Difference				
					677. Lower	678. Upper			
679. Pair 1	680. Pretest - Posttest	681. -2,850	682. 1,461	683. ,327	684. -3,534	685. -2,166	686. 8,725	687. 9	688. ,000

Table 14. Paired Sample T Test Control

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PRETEST - POSTEST	-1,900	1,071	,240	-2,401	-1,399	-7,933	19	,000

The results of the analysis of the paired sample t-test from the experiment and control state that the sig. (2-tailed) value is 0.00 because the 2-tailed significance value is smaller than 0.05, then the data can be stated that Ho is rejected and Ha is accepted, meaning that the alternative hypothesis is accepted and the null hypothesis is rejected. This means that there is a significant difference in the average between the results of *pretest* and *posttest* with traditional game media

The results of the analysis of the paired sample t-test from the experiment and control state that the sig. (2-tailed) value is 0.00 because the 2-tailed significance value is smaller than 0.05, then the data can be stated that Ho is rejected and Ha is accepted, meaning that the alternative hypothesis is accepted and the null hypothesis is rejected. This means that there is a significant difference in the average between the results of *pretest* and *posttest* with traditional game media.

Based on the results of the hypothesis testing above, the conclusion of the Hypothesis Test Decision is that Ho is rejected and Ha is accepted. The conclusion of the Hypothesis Test results

proves that there is an influence of traditional games on the level of physical fitness of students of Jannatul Firdaus Kedunggal Integrated Vocational School.

Based on the results of the study, it shows that there is a significant relationship between traditional games and physical fitness of students at SMK Terpadu Jannatul Firdaus Kedunggal, which is proven by a significance value of $p < 0.05$. These results can be interpreted that traditional games are one of the components that influence a person's physical fitness.

Many factors affect a person's level of physical fitness, including age, gender, heredity, diet, smoking habits, exercise, physical activity and body fat. Accumulation of fat can reduce physical fitness (Verdú et al., 2021; Alibrahim et al., 2025). Frayn (2010) stated that fat tissue is a tissue that is not directly involved in the energy formation process, which is directly involved in energy formation is muscle tissue. Obese people have more fat tissue than in muscle tissue, so it has a small capacity to produce energy. Physical fitness will be better in someone who has more active tissue than someone who has little active tissue (Shephard, 2024; Filgueira et al., 2021).

Nowadays, students tend to stop activities that require a lot of energy. Students have been burdened with schoolwork, homework, extracurricular activities, so that students do not have much time to do activities that can improve physical fitness (Marsh & Kleitman, 2002; Claxton & Wells, 2009). This certainly affects eating habits, physical activity.

Doing sports regularly and in accordance with the recommended standards can also improve a person's health. Through regular exercise, there is cooperation between various body muscles which is marked by changes in muscle strength, muscle flexibility, reaction speed, agility, movement coordination and cardiorespiratory system endurance which are components of physical fitness. Increasing physical fitness in the school environment needs to be fostered to support the achievement of an optimal learning process (Chen & Solmon, 2024). If students have a good level of physical fitness, they will be able to carry out their learning obligations well. However, if students have a poor level of physical fitness, it is possible that they will not be able to accept the burden of learning.

Conclusion

Based on the objectives and analysis of research data, it is proven that there is an increase in the average score of physical fitness levels of students of Integrated Vocational School Jannatul Firdaus Kedunggal before and after being given experiments and controls, namely from the initial average score before being given experiments and controls was 11.10 while the average score after being given experiments and controls showed an increase to 13.95 and 13.00. Furthermore, by looking at the results of the calculation of the t-test formula for small samples that are interrelated in this study, namely showing that the sig. (2-tailed) value is 0.00 because the 2-tailed significance value is smaller than 0.05, the data can be stated that H_0 is rejected and H_a is accepted, meaning that the alternative hypothesis is accepted and the null hypothesis is rejected. It can be concluded that there is a significant influence of traditional games given to experimental students and basic physical training to control students of Integrated Vocational School Jannatul Firdaus Kedunggal.

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