

FROM SCREENS TO PLAYGROUNDS: PROMOTING ACTIVE LIFESTYLES IN CHILDREN THROUGH TRADITIONAL GAMES

Rizky Sugianto Putri^{1*}, Citra Hennida², Salma Faiza Malika³, Firlie Najah Salamah⁴, Alfonsus Arya Gading⁵, Elok Indriani⁶, Dava Bagus Primusandi⁷

^{1,3,4,6,7}Departement of Anthropology, Universitas Airlangga

²Departement of Internasional Relations, Universitas Airlangga

⁵Departement of Communication, Universitas Airlangga

Corresponding Author: rs_putri@fisip.unair.ac.id

Disubmit: 31 Juli 2026 Diterima: 13 Agustus 2026 Diterbitkan: 01 September 2026

Doi: <https://doi.org/10.33024/jkpm.v9i9.27443>

ABSTRACT

Advancements in technology have led to a sedentary lifestyle among children. This situation hampers their growth and development and may increase the risk of non-communicable diseases (NCDs) such as diabetes, obesity, and cardiovascular diseases. It will affect Indonesia's fragile human resources and strain the healthcare budget. This community service programme aims to support the realisation of an Indonesia Bugar 2045, as expressed by President Prabowo. We utilise traditional games to encourage children to be more active and spend more time outdoors. Our methods include a combination of traditional game roadshows, educational sessions, and focus group discussions. Participants in this activity comprise 40 fourth-grade students, four teachers, and 11 parents from SDN Simokerto V, Surabaya. The community service implementation achieved three outcomes: (1) increased knowledge and awareness among teachers and parents regarding the link between a sedentary lifestyle and the risk of NCDs in children; (2) introduction of three types of traditional games that improve motor skills and cognition, in collaboration with our community service partner, Kampoeng Dolanan; and (3) seventeen variables of anthropometric data and physical performance of 10- to 11-year-old children, which can serve as a foundation for further research on growth and development. The implications of this activity include fostering a mindset among children, parents, and teachers that outdoor physical activity is vital for optimal growth and development and for preventing NCDs in children. As a result, teachers and parents can create a range of more inventive activities both at school and at home. Moreover, it encourages children to engage in more physical activity at an affordable cost through traditional games.

Keywords: Anthropometry, Non-Communicable Disease (NCD), Sedentary Lifestyle, Traditional Games.

1. INTRODUCTION

Indonesia is a country rich in cultural diversity, including traditional games that have existed since ancient times. According to data from the Committee for Traditional Games and Sports (KPOTI), there will be approximately 2,600 traditional games across Indonesia by 2023 (KEMENPPPA, 2023). Unfortunately, with current technological advances,

the role of traditional games in local culture is beginning to be forgotten. Yet these games not only keep children physically active but also foster character development, teaching cooperation, sportsmanship, and honesty (Dharmawan, 2024).

Furthermore, traditional games can encourage children to be physically active and spend time outdoors. According to data from the Indonesian Health Survey (2024), reported that 37.4% of people aged ≥ 10 years had insufficient physical activity (Kemenkes, 2024). Not only in Indonesia, but many countries worldwide are facing the same issue. The proportion of physical activity is decreasing due to a heavy reliance on gadgets and technological progress. Children who should be actively playing and engaging in outdoor activities are instead staying indoors with their devices. Screen time (ST) or the duration children spend in front of devices has increased since the COVID-19 pandemic. A study in Canada found a correlation between the COVID-19 pandemic and the rise in ST among children. He also highlighted the various consequences of children's early exposure to the digital world (Ponti, 2023). A lack of physical activity also contributes to disrupted sleep patterns. Another study also explains that the long-term effects of the COVID-19 pandemic have restricted physical activity, leading to chronic sleep disturbances among the younger generation (Diniz et al., 2020).

Digital devices are embedded in schooling, communication, and family life, so the objective is not to frame technology as inherently harmful. The practical concern is displacement: screen-based activity can replace active play, outdoor mobility, household participation, and sleep. Accelerometer-based evidence across school segments shows substantial sedentary time and that elementary pupils may fail to achieve 60 minutes of moderate-to-vigorous physical activity per day (Lu et al., 2023). Participation can also be affected by functional barriers. Harrington et al. found that schoolchildren with visual impairment were more likely to report no physical activity, underscoring the need for inclusive opportunities (Harrington et al., 2023). Effective intervention therefore requires enjoyable, socially supported, affordable movement that fits the spaces available at home and school.

In Indonesia, NCDs rank among the top three leading causes of death (WHO, 2018). The rise in NCDs among children is primarily attributed to a sedentary lifestyle (Park et al., 2020). There are at least two leading causes of this sedentary behaviour in children. First, there is a lack of parental and school involvement in regulating device use and encouraging children to engage in more physical activity and exercise. Holistic support is necessary for Indonesia's younger generation. Teachers at school, acting as both guardians and supervisors, alongside parents at home, must share a common vision for fostering healthy lifestyle habits throughout their developmental years. Such initiatives have been implemented in Germany and Hungary, where physical activity is a key pillar in reducing the risk of NCDs (Szeifert et al., 2024). Second, physical activity and outdoor play remain underexpressed in the play habits of many children.

Activities involving devices tend to be more appealing than physical exercise. According to research conducted by García (2022), 28% of the world's population lacks daily movement or physical activity. This sedentary lifestyle is linked to various NCDs, such as 6% of heart disease, 7% of type 2 diabetes, and 20% of cancers (García-Pérez-De-Sevilla & Sánchez-Pinto, 2022). Early NCD screening can serve as a detection step, helping prevent

rising NCD figures in the future. As demonstrated by Rosidin et al. (2020) in Jayawaras Taragong Kidul, Garut, socialisation and education efforts continue at various levels of society to raise awareness of NCDs (Rosidin et al., 2020).

This community engagement programme treated traditional games as a biocultural health resource. The games are cultural practices that also organise bodily movement, motor learning, attention, sociality, and emotional engagement. In partnership with Kampoeng Dolanan, the programme combined direct play with parent-teacher education, focus group discussion (FGD), and a descriptive assessment of anthropometry and physical performance. The programme was designed not as a clinical intervention or an efficacy trial, but as an initial model for connecting cultural revitalisation, school health promotion, and baseline physical assessment in a resource-constrained urban school.

Furthermore, the aims of this study contribute in three ways. First, it documents how traditional games can be adapted into a structured school activity rather than being treated solely as cultural performance. Second, it integrates educational and physical-assessment components, enabling the programme to address awareness and embodiment simultaneously. Third, it identifies practical barriers, particularly screen-based routines and limited school space, that must be considered when designing sustainable physical-activity programmes.

2. PROBLEMS AND RESEARCH QUESTIONS

SDN Simokerto V/138 is located in a densely populated part of Surabaya (Figure 1). Preliminary observation and informal discussion with teachers indicated that students had limited opportunities for outdoor movement outside the scheduled physical education lesson. The school's constrained activity space and the distance to a separate sports field reduced the feasibility of frequent large-scale exercise. At home, parents described difficulty redirecting children from mobile phones and other screen-based activities even when exercise equipment or weekend recreation was available. These conditions created a mismatch between children's developmental need for regular movement and the social and spatial organisation of their daily routines.

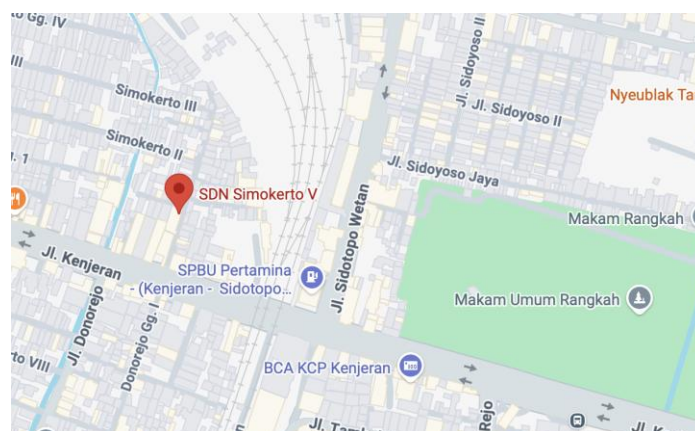


Figure 1. Location of SDN Simokerto V/138, Surabaya
Source: Google Maps, 2026

The research questions of this community engagement programme include: (1) How can traditional games be organised as a low-cost, engaging physical activity programme for primary-school children?; (2) What do descriptive anthropometric and physical performance measurements reveal about the diversity of children's baseline conditions?; (3) How do education and facilitated discussion affect parent-teacher understanding, and what barriers to children's active living emerge from their accounts?.

3. LITERATURE REVIEW

Sedentary behaviour, physical activity, and childhood health

Physical activity supports cardiovascular function, musculoskeletal development, motor competence, metabolic regulation, and psychological well-being. Guidance for school-aged children generally recommends at least 60 minutes of moderate-to-vigorous physical activity per day, together with reduced sedentary time (Dhuli et al., 2022). However, activity is not produced by motivation alone. It depends on family routines, school schedules, neighbourhood safety, available space, peer participation, and cultural expectations.

In Indonesia, SKI 2023 recorded insufficient physical activity among 37.4% of people aged ≥ 10 years, while Hanifah et al. highlighted persistent sedentary behaviour and low physical activity among children (Hanifah et al., 2023). Accelerometer data also show that activity varies by age and school segment, with elementary pupils in one study averaging below the recommended daily 60 minutes of moderate-to-vigorous activity (Lu et al., 2023). These findings position inactivity as a family, school, and environmental issue rather than simply an individual motivation issue.

Sedentary behaviour is distinct from simply not participating in organised sport. A systematic review of 116 reports found that school-related sedentary behaviour can displace movement, whereas active lessons were generally beneficial for health and well-being (Kuzik et al., 2022). Among 515 children aged 9-11 years, supportive school policies, supervision, breaks, extracurricular opportunities, and outdoor sports space were associated with higher levels of moderate-to-vigorous physical activity (Sales et al., 2023). Interventions therefore need to alter opportunities and routines, not merely provide advice (LaCaille & Appleseth, 2020). A recent LMIC meta-analysis found a small but significant overall effect on physical activity, with substantial heterogeneity, reinforcing the need for context-specific and rigorously evaluated approaches (Shrestha et al., 2026).

Traditional games as biocultural and educational resources

Traditional games integrate physical action with cultural rules and social learning. Rope jumping coordinates rhythm, lower-limb power, balance, and timing, while also requiring turn-taking and peer cooperation. Boy-boyan combines throwing, dodging, running, tactical decisions, and teamwork. Card-based games such as Minocard involve less vigorous movement but can support attention, memory, basic academic content, and face-to-face interaction. Previous studies have described traditional games as media for moral learning, social participation, and interactive classroom instruction (Paradisa, 2017; Sumiyati, 2018). Their health value therefore lies not only in energy expenditure but also in making movement meaningful and socially attractive.

This approach differs from importing a standardised exercise package. Traditional games can be modified according to age, space, equipment, and group size. They also draw on intergenerational memory: parents and teachers often recognise the games from their own childhood, which can strengthen emotional engagement and facilitate discussion about changes in children's leisure. Visual materials and reflection on personal experience can support critical learning because participants connect abstract health information with familiar practice (Yazidi, 2023).

A quasi-experimental study of 60 school-aged children, an eight-week traditional-games program produced significant improvements across physical, psychological, social, and cognitive domains of physical literacy (Çinar & Hassani, 2026). In Indonesia, Suryadi et al., systematically reviewed school-based evidence and concluded that traditional games can improve elementary pupils' physical fitness by increasing active participation, movement engagement, and practice of developmentally appropriate motor skills (Suryadi et al., 2025). These findings support traditional games as culturally grounded pedagogical tools rather than merely recreational heritage.

In an application of a biocultural approach, Siregar and Ilham, drawing on interviews with Bajo parents and teachers, reported that traditional play was perceived as important for children's physical and psychological health, including cognitive, emotional, and social development (Siregar & Ilham, 2019). Games can also be modified according to age, space, equipment, and group size and can activate intergenerational memory when parents and teachers recognise activities from their own childhood. Reflection on familiar experience can help participants connect abstract health messages with everyday practice and encourage critical discussion (Yazidi, 2023).

Parental modelling and family-school collaboration in active living

Children's daily activity is negotiated within family routines before it becomes an individual choice. Parents shape access to devices, transport, sleep and meal schedules, weekend recreation, permission to play outside, and opportunities for shared movement. They may also function as behavioural models. In an accelerometer-based study of school-aged children with obesity and their parents, Lundh et al. found a significant, although weak, correlation between parent and child sedentary time (Lundh et al., 2025). No significant parent-child association was found across physical activity intensity levels, suggesting that parental influence should not be reduced to simple behavioural imitation: facilitation, encouragement, access, and co-participation may also matter.

Evidence from the EPI-FAMILY Health Study adds an important nuance. Santos et al. found that mother-child and father-child sedentary behaviour was significantly associated when parents were insufficiently active, whereas these associations were not significant among physically active parents (Santos et al., 2026). Because the study was cross-sectional, it does not demonstrate that active parents directly cause children to sit less. Nevertheless, it supports a family-environment perspective in which parental activity can shape the context in which children's sedentary routines develop. Family-centred programs should therefore invite parents to model and share active routines rather than assigning them only the role of restricting screen time.

Schools remain the second major setting. Teachers influence access to play spaces, movement breaks, and the legitimacy of active play, while parents influence what happens before and after school. Evidence indicates that school policies, breaks, facilities, and active classroom practices can materially shape children's movement opportunities (Kuzik et al., 2022; Sales et al., 2023). Community programs that address only one setting therefore risk shifting responsibility rather than changing the environment. The FGD in this program was designed to create a shared problem definition among teachers, parents, the university team, and the community partner.

4. METHODS

Program design, site, and participants

The community service program used a mixed descriptive design combining participatory activities, health education, qualitative discussion, knowledge assessment, and physical measurement. It was implemented at SDN Simokerto V/138, Surabaya, on 11-12 June 2025. Participants were selected purposively because fourth-grade students were the target age group for the program. The student group comprised 40 children aged 10-11 years. The adult education and FGD sessions involved 15 participants: four teachers and 11 parents or guardians. Kampoeng Dolanan, a Surabaya-based community dedicated to revitalising Indonesian traditional games, served as the implementation partner.

Program stages

The program was organised in three stages. During preparation, the team observed activities at the partner organisation and school, held planning discussions, selected games that combined motor and cognitive engagement, prepared educational materials, and allocated measurement stations. Implementation consisted of a two-hour traditional-game roadshow on the first day, followed on the second day by health education, an FGD, anthropometric and physical performance measurements, and a post-activity reflection. The evaluation stage included pre- and post-tests for adult participants, descriptive data analysis, preparation of game posters, and discussion with teachers about continuity.

Table 1. Stages of the Community Service Program

Stage	Main activities	Participants	Immediate output
Preparation	Partner and school observation; game selection; instrument and education preparation	University team, Kampoeng Dolanan, teachers	Three selected games and an implementation plan

Implementation	Game roadshow; health education; FGD; anthropometric and performance measurements	40 students; 4 teachers; 11 parents	Participation, discussion data, pre/post responses, and physical baseline data
Evaluation	Descriptive analysis; reflection; poster production and handover	University team, partner, school	Knowledge profile, program lessons, and reusable activity materials

Traditional-game roadshow

Three games were selected (Figure 2). Rope jumping was chosen for rhythmic jumping, lower-limb coordination, balance, and minimal equipment requirements. Boy-boyan was selected because it involves running, throwing, dodging, tactical cooperation, and rapid transitions between attacking and defending roles. Minocard, an original educational card game developed by Kampoeng Dolanan, was included to combine social interaction with questions on basic mathematics, natural and social knowledge, and Indonesian traditional games. The games were introduced in rotating groups so that all students could participate.



Figure 2. Children Playing Jump Rope (A), Boy-boyan (B), and Minocard (C)
Source: Community Service Team, 2025

Anthropometric and physical-performance assessment

Four trained student team members, supervised by a lecturer, collected 17 variables over approximately 2.5 hours. Anthropometric variables were standing height, body mass, body mass index (BMI), vertical grip reach, lateral grip reach, triceps skinfold, biceps skinfold, subscapular skinfold, abdominal skinfold, sitting height, femur length, and tibia length. Physical-performance variables were dominant-hand grip strength, flamingo balance, one-minute sit-ups, one-minute push-ups, and arm-hang duration. Four measurement instruments were used for anthropometric data collection: (a) stadiometer, (b) dynamometer, (c) skinfold calliper, and (d) pull-bar (Figure 3). Results from anthropometric and physical performance measurements were analysed using descriptive statistics in Excel and SPSS 26 to describe variations in growth and development among 10-11-year-olds in Surabaya. These data can support future research on growth, physical performance, and cross-sectional studies.

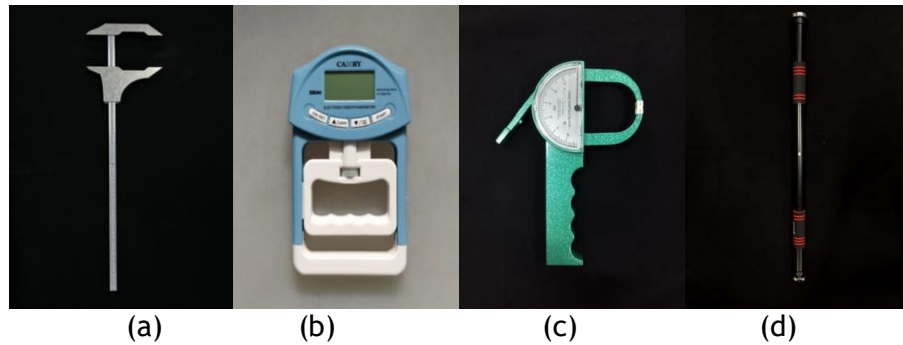


Figure 3. Measurement Instruments
Source: Community Service Team, 2025

Education, focus group discussion, and evaluation

The adult session began with a 15-item pre-test covering four domains: consequences of insufficient physical activity, sedentary-behaviour risks, childhood NCD risks, and the potential role of traditional games. The education session, titled “Health Means Playing Outside: Reducing NCD Risk through Enjoyable Physical Activity,” used photographs from the roadshow and examples from participants’ childhood experiences. The same items were administered after education and discussion. Because the adult sample was small, results were interpreted descriptively rather than as evidence of statistical effectiveness.

The FGD used a semi-structured daily-routine exercise. Participants reconstructed children’s activities from waking to bedtime and estimated time spent on outdoor movement, school activity, screen use, sleep, and household participation. Facilitators explored parental strategies, children’s responses to exercise invitations, school rules, available space, and feasible low-cost alternatives. Notes were summarised thematically to identify recurrent barriers and opportunities. Student measurements and adult responses are reported in aggregate.

5. RESULTS AND DISCUSSION

Implementing traditional games as low-cost active play

All 40 students joined the roadshow, and field observation showed high enthusiasm across the three stations. Rope jumping and boy-boyan generated the most continuous whole-body movement. Both required students to coordinate their actions with others rather than perform isolated repetitions. Minocard provided a lower-intensity station that maintained interaction while allowing recovery between more vigorous activities. This rotation illustrates an important program principle: an active-play session does not need to consist of uniformly intense exercise. Alternating vigorous, skill-based, and cognitive-social activities can sustain engagement among children with different confidence and physical capacities.

The games were inexpensive and used materials that could be obtained or reproduced locally. Rope jumping required an elastic rope, boy-boyan used a light ball and stackable objects, and Minocard required reusable cards. This matters because the cost of organised sport, facility access, uniforms, transport, and coaching can exclude children even when families recognise the value of physical activity. By contrast, traditional games

reduce material barriers and can be conducted during breaks, class transitions, community events, or neighbourhood play. Their flexibility makes them relevant to schools where a full sports field is not continuously available.

The cultural familiarity of the games also supported adult engagement. During education, teachers and parents compared their own childhood play with children's current leisure patterns. This intergenerational contrast shifted the discussion from blaming individual children to examining how routines, spaces, technology, and adult supervision have changed. The games therefore functioned as both movement activities and discussion devices. This dual role is consistent with studies that describe traditional play as a medium for social learning, cooperation, and character formation (Paradisa, 2017; Sumiyati, 2018).

Anthropometric and physical-performance baseline

Table 2. Distribution of Anthropometric Data and Physical Performance (n=40)

Variable	Min	Max	Mean	SD±
Height (cm)	124	154	136.2	8.05
Weight (kg)	20.5	59.1	33.4	9.9
BMI	12.8	27	17.7	3.91
Vertical Grip Reach (cm)	155	200	172	10.9
Lateral Grip Reach (cm)	62	82	69	4.4
Triceps Skinfold (mm)	9	42	21.7	7.9
Biceps Skinfold (mm)	5	25	12	5.3
Subscapular Skinfold (mm)	7	30	15.6	6.6
Abdominal Skinfold (mm)	3	33	15.2	7.9
Femur Length (cm)	31.5	43	36.7	2.8
Tibia Length (cm)	29.1	37.1	32.6	2.1
Sitting Height (cm)	60.8	81.5	72.7	4.7
Grip Strength (kg)	5.3	23.4	11.7	4.1
Flamingo Balance (s)	1	60	16.4	17.9
1-minute Sit-ups (x)	0	22	10	6
1-minute Push-ups (x)	0	29	11	5
Arm Hang (s)	0	60	11.4	10.4

Table 2 shows that the mean height was 136.2 cm (SD 8.05) and the mean body mass was 33.4 kg (SD 9.90). The mean BMI was 17.7 kg/m², with a range of 12.8 to 27.0 kg/m². Using the age-10 reference ranges presented in the 2024 Indonesian Health Survey, this range spans categories from undernutrition to obesity, whereas the sample mean lies within the normal range (Kemenkes, 2024). The central finding is therefore not that the class shared a single nutritional problem, but that markedly different body conditions coexisted within a small group. Any follow-up programme should avoid a uniform, weight-centred message and instead combine movement,

nutrition, and individual referral where required.

Skinfold values also varied widely, especially at the triceps and abdominal sites. Because the program did not calculate sex-specific body-fat equations or age-standardised percentiles, these measurements should be treated as a descriptive baseline rather than a diagnosis of adiposity. Similar research in the Philippines and Bangladesh demonstrates that childhood body dimensions are shaped by socioeconomic, nutritional, and environmental conditions (Capanzana et al., 2018; Kamruzzaman et al., 2021). Repeated school-level measurements could become useful only when standardised procedures, age and sex stratification, and appropriate reference data are applied.

Physical-performance measures showed equally substantial heterogeneity. Mean dominant handgrip strength was 11.7 kg, while flamingo balance averaged 16.4 seconds with an SD larger than the mean. Some children completed no sit-ups, push-ups, or arm-hang time, whereas others achieved markedly higher values. Without age- and sex-specific normative comparison and repeated trials, the data cannot establish clinical “fitness deficiency.” They do, however, show that a single class contains different levels of strength, balance, endurance, familiarity with testing, and confidence. This variation supports the use of adaptable games that allow multiple roles and progressive difficulty rather than competitive elimination.

Knowledge change and the social barriers to active living

After education and discussion, 10 of the 15 adult participants (67%) were classified in the good-knowledge category, three (20%) in the adequate category, and two (13%) in the limited category (Table 3). Figure 4 illustrates the participant-level pre- and post-test profile, indicating improvement for most participants, although two scores decreased. One participant increased from 46.6 to 86.3, and another obtained a post-test score of 100. These results suggest short-term learning, but they should not be interpreted as statistically verified program effectiveness because the sample was small, there was no comparison group, and the test was administered immediately after the activity.

Table 3. Participants’ Percentage of Understanding Level

Categories	Participant	Percentage
Good	10	67%
Enough	3	20%
Poor	2	13%

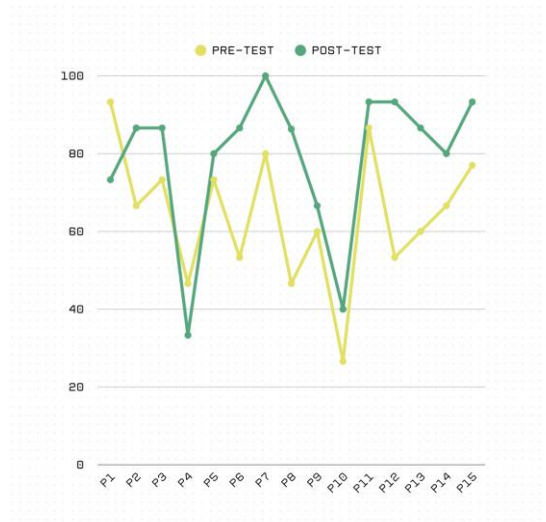


Figure 4. Participant Pre- and Post-Test Results

The educational design appeared to work best when information was connected to visible and remembered experience. Photographs of students playing allowed adult participants to discuss movement in concrete terms, while recalling their own childhood games helped them recognise that active play had once been ordinary rather than an additional scheduled obligation. This method is consistent with visual and experiential approaches to critical learning (Harrington et al., 2023). The two declining scores also show why post-session evaluation should not be treated as ceremonial. Participants may misunderstand particular items, experience fatigue, or require different forms of explanation. Future programs should review item-level errors and provide delayed follow-up rather than relying only on immediate post-tests.

The FGD identified screen exposure as the most persistent home-based barrier (Figure 5). Most parents estimated that their children's total daily screen time could reach 10-12 hours, while two participants reported less than four hours because devices were shared with adults. These estimates were not verified through device logs and may include school-related or background use, but they reveal parents' perception that screens dominate children's daily time. One parent explained that a treadmill was available at home but was used by the parent rather than the child; another had exercise equipment and offered visits to the weekly car-free day, yet the child remained reluctant. These accounts indicate that access to equipment does not automatically produce participation. Enjoyment, companionship, autonomy, habit, and social meaning influence whether children choose to move.

Teachers described a different but related constraint. Mobile phones were prohibited at school, yet the limited schoolyard and the sports field located approximately two kilometres away meant that formal physical activity was concentrated in the weekly physical-education lesson. Teachers sometimes used role play or brief movement-based icebreakers, but classroom space restricted more regular activity. This finding shifts the intervention question from "How can the school provide more sports?" to "How can the school create frequent movement opportunities within existing spatial constraints?" Short game stations, rotating groups, corridor-safe activities, class-based movement breaks, and scheduled traditional-game

sessions may be more realistic than waiting for new infrastructure.



Figure 5. Integrated program activities
Source: Community Service Team, 2025

Program implications, limitations, and sustainability

The program demonstrates that cultural revitalisation and health promotion can be combined without reducing traditional games to folklore or reducing children's bodies to measurements. The play component created immediate participation; anthropometry and performance testing provided a heterogeneous baseline; and the adult sessions located children's behaviour within family and school systems. This integrated design is especially relevant where expensive facilities are unavailable. International programs may use extensive infrastructure, subsidised sports courses, or formal daily-activity systems, but community-based approaches can begin with locally available practices and materials (SSF, 2024).

Several limitations constrain interpretation. The program involved one school, a small purposive sample, and only two days of implementation. Physical activity intensity during the games was not measured with accelerometers or systematic observation. Anthropometric and performance data were descriptive and were not stratified by sex or compared with validated age-specific fitness standards. Screen time was parent-reported, and the knowledge evaluation had no control group or delayed follow-up. Consequently, the program cannot establish that traditional games improved fitness, nutritional status, or long-term behaviour. Its value lies in feasibility, problem identification, participant engagement, and the production of a baseline for a more rigorous next phase.

Sustainability requires converting a roadshow into routine practice. The school can designate short weekly or twice-weekly traditional-game periods, rotate game leaders, store simple equipment, and use the posters as rule reminders. Parents can be encouraged to organise shared play rather than merely restrict devices or purchase exercise equipment. The university and community partner can support teacher training and periodic monitoring. A future evaluation should record frequency and duration of participation, use validated physical-activity and screen-time instruments, repeat selected fitness measures, and examine whether engagement differs by sex, body condition, confidence, and prior experience.

Recommendation for future research

Future research should test recurring traditional-game programs across multiple schools using longitudinal or cluster-controlled designs rather than one-off implementation. Children's movement should be measured objectively with accelerometers and complemented by validated screen-

time measures, while physical literacy, fitness, anthropometry, enjoyment, and participation are assessed at baseline, post-intervention, and follow-up.

Analyses should examine sex, baseline body condition, visual or functional barriers, school-space indicators, parental activity, and parent-child co-participation as potential moderators. Given the small and heterogeneous effects reported for physical-activity interventions in low- and middle-income countries (Shrestha et al., 2026), future studies should also document adherence, implementation cost, acceptability, and maintenance to determine whether traditional games can scale as a sustainable family-school strategy.

6. CONCLUSIONS

Traditional games can be organised as a practical, low-cost form of school-based active play by selecting games that require simple materials, allow rotating participation, and combine motor, cognitive, and social engagement. The baseline assessment showed that children in one classroom did not have a uniform body or fitness profile; their anthropometric and performance values varied widely, supporting adaptive rather than one-size-fits-all activities. Education and FGD helped teachers and parents link sedentary routines to health risks, while revealing that high screen exposure, limited shared activity at home, and restricted school space were more decisive barriers than the complete absence of equipment. The appropriate next step is a recurring family-school programme in which parents and teachers model, enable, and share enjoyable movement with children. Multi-school longitudinal research with objective activity measurement is recommended to test effectiveness, sustainability, and scalability.

ACKNOWLEDGMENT

Thank you to Kampung Dolanan, our partner in this community service activity. Thank you also to all fourth-grade students, teachers, and parents of SDN Simokerto V, Surabaya. Additionally, under the Decree of the Rector of Universitas Airlangga number 463/UN3/2025, this research was funded under the Community Service 2025 programme by Universitas Airlangga, with contract number 5102/B/UN3.FISIP/PM.01.01/2025.

7. REFERENCES

- Capanzana, M. V., Aguila, D. V., Gironella, G. M. P., & Montecillo, K. V. (2018). Nutritional Status Of Children Ages 0-5 And 5-10 Years Old In Households Headed By Fisherfolks In The Philippines. *Archives Of Public Health*, 76(1), 1-8. <https://doi.org/10.1186/S13690-018-0267-3/Tables/3>
- Çınar, M., & Hassani, F. (2026). The Effects Of Traditional Games On Physical Literacy Among School-Aged Children. *Frontiers In Sports And Active Living*, 7, 1759890. <https://doi.org/10.3389/Fspor.2025.1759890>
- Dharmawan. (2024). *Rri.Co.Id - Mengenal Permainan Tradisional Lompat Tali Karet/Yeye*. Radio Republik Indonesia. <https://www.rri.co.id/Daerah/699057/Mengenal-Permainan-Tradisional-Lompat-Tali-Karet-Yeye>

- Dhuli, K., Naureen, Z., Medori, M. C., Fioretti, F., Caruso, P., Perrone, M. A., Nodari, S., Manganotti, P., Xhufi, S., Bushati, M., Bozo, D., Connelly, S. T., Herbst, K. L., & Bertelli, M. (2022). Physical Activity For Health. *Journal Of Preventive Medicine And Hygiene*, 63(2 Suppl 3), E150. <https://doi.org/10.15167/2421-4248/Jpmh2022.63.2s3.2756>
- Diniz, T. A., Christofaro, D. G. D., Tebar, W. R., Cucato, G. G., Botero, J. P., Correia, M. A., Ritti-Dias, R. M., Lofrano-Prado, M. C., & Prado, W. L. (2020). Reduction Of Physical Activity Levels During The Covid-19 Pandemic Might Negatively Disturb Sleep Pattern. *Frontiers In Psychology*, 11, 586157. <https://doi.org/10.3389/fpsyg.2020.586157>
- García-Pérez-De-Sevilla, G., & Sánchez-Pinto, B. (2022). Physical Inactivity And Chronic Disease. *Nutrition Today*, 57(5), 252-257. <https://doi.org/10.1097/Nt.0000000000000556>
- Hanifah, L., Nasrulloh, N., & Sufyan, D. L. (2023). Sedentary Behavior And Lack Of Physical Activity Among Children In Indonesia. *Children*, 10(8), 1283. <https://doi.org/10.3390/Children10081283>
- Harrington, S., Kearney, J., & O'dwyer, V. (2023). Visual Factors Associated With Physical Activity In Schoolchildren. *Clinical & Experimental Optometry*, 106(6), 645-655. <https://doi.org/10.1080/08164622.2022.2106780>
- Kamruzzaman, M., Rahman, S. A., Akter, S., Shushmita, H., Ali, M. Y., Billah, M. A., Kamal, M. S., Elahi, M. T., & Paul, D. K. (2021). The Anthropometric Assessment Of Body Composition And Nutritional Status In Children Aged 2-15 Years: A Cross-Sectional Study From Three Districts In Bangladesh. *Plos One*, 16(9), E0257055. <https://doi.org/10.1371/Journal.Pone.0257055>
- Kemendes. (2024). *Laporan Tematik Survei Kesehatan Indonesia Tahun 2023*. <https://drive.google.com/file/d/1anudqgqufa5jsxejwpsv4r7v6d5yzm7/view>
- Kemenpppa. (2023). *Menteri Pppa Ajak Anak Indonesia Lestarkan Permainan Dan Olahraga Tradisional*. Siaran Pers Nomor B-485/Setmen/Hm.02.04/11/2023. <https://www.kemenpppa.go.id/page/view/ndk4oa==#>
- Kuzik, N., Da Costa, B. G. G., Hwang, Y., Verswijveren, S. J. J. M., Rollo, S., Tremblay, M. S., Bélanger, S., Carson, V., Davis, M., Hornby, S., Huang, W. Y., Law, B., Salmon, J., Tomasone, J. R., Wachira, L. J., Wijndaele, K., & Saunders, T. J. (2022). School-Related Sedentary Behaviours And Indicators Of Health And Well-Being Among Children And Youth: A Systematic Review. *International Journal Of Behavioral Nutrition And Physical Activity* 2022 19:1, 19(1), 40-. <https://doi.org/10.1186/s12966-022-01258-4>
- Lacaille, R., & Appleseth, H. (2020). Interventions And Strategies To Promote Physical Activity. In *Encyclopedia Of Behavioral Medicine* (Pp. 1234-1241). Springer, Cham. https://doi.org/10.1007/978-3-030-39903-0_1618
- Lu, Y., Yu, K., Zhai, M., & Ma, P. (2023). Age And School-Segment Difference In Daily Sedentary Behavior And Physical Activity Among Student (9-23 Years): A Cross-Sectional Accelerometer-Based Survey. *Frontiers In Pediatrics*, 11, 1202427. <https://doi.org/10.3389/fped.2023.1202427>

- Lundh, H., Arvidsson, D., Greven, C., Fridolfsson, J., Börjesson, M., Boman, C., Lauruschkus, K., Lundqvist, S., Melin, K., & Bernhardsson, S. (2025). Physical Activity And Sedentary Behaviour Amongst Children With Obesity - Exploring Cross-Sectional Associations Between Child And Parent. *Journal Of Activity, Sedentary And Sleep Behaviors*, 4(1), 2-. <https://doi.org/10.1186/S44167-025-00072-0/Figures/5>
- Paradisa, T. (2017). Permainan Tradisional Lompat Tali Merdeka Sebagai Media Pelaksanaan Proses Game Stage Di Sd Negeri 94 Pekanbaru. *Jom Fisip*, 4(2).
- Park, J. H., Moon, J. H., Kim, H. J., Kong, M. H., & Oh, Y. H. (2020). Sedentary Lifestyle: Overview Of Updated Evidence Of Potential Health Risks. *Korean Journal Of Family Medicine*, 41(6), 365. <https://doi.org/10.4082/Kjfm.20.0165>
- Ponti, M. (2023). Screen Time And Preschool Children: Promoting Health And Development In A Digital World | Canadian Paediatric Society. *Paediatric Child Health Journal*, 28(3), 184-192. <https://cps.ca/en/documents/position/screen-time-and-preschool-children>
- Shrestha, R., Paudel, S., Adhikari, T. B., Khatri, B., Adhikari, S., Neupane, D., Vaidya, A., Kallestrup, P., & Rijal, A. (2026). Effectiveness Of Physical Activity Promotion Interventions In Low-Income And Middle-Income Countries: A Systematic Review And Meta-Analysis. *British Journal Of Sports Medicine*, 60(4), 286-299. <https://doi.org/10.1136/Bjsports-2025-110035>
- Siregar, N. R., & Ilham, M. (2019). Traditional Game As A Way For Healthy In Bajo's Children. *Kne Life Sciences*, 4(11), 19-25-19-25. <https://doi.org/10.18502/Kls.V4i11.3848>
- Ssf. (2024). *How Do Children And Young People In Japan Participate In Sports And Physical Activity?* - Sasakawa Sports Foundation. https://www.ssf.or.jp/en/features/japans_data_plus_sports/E0019.html
- Sumiyati. (2018). Turnamen Dalam Permainan Boy Boyan Materi "Greeting, Taking Leave, Thanking And Apologizing" Untuk Meningkatkan Hasil Belajar Peserta Didik Kelas Viie Smp Negeri 2 Merbau Mataram Tahun 2018. *Satya Widya*, 34(2), 167-175. <https://doi.org/10.24246/J.Sw.2018.V34.I2.P167-175>
- Suryadi, D., Ivanov, D., & Zulnadila, Z. (2025). Stimulation Of Physical Fitness Through Traditional Games In Elementary School Students: A Systematic Review In Indonesia. *Journal Of Applied Movement And Sport Science*, 1(3), 12-19. <https://doi.org/10.65575/Jamss.V1i3.92>
- Szeifert, N. M., Vágó, H., & Gonda, X. (2024). Physical Activity As The Basic Pillar Of Lifestyle Medicine. *Orvosi Hetilap*, 165(43), 1683-1693. <https://doi.org/10.1556/650.2024.33144>
- Who. (2018). *Non-Communicable Diseases In Indonesia*. https://cdn.who.int/media/docs/default-source/country-profiles/ncds/ldn_en.pdf?sfvrsn=fbb0cdfb_33&download=true
- Yazidi, R. El. (2023). Strategies For Promoting Critical Thinking In The Classroom. *International Journal Of English Literature And Social Sciences*, 8(2). <https://doi.org/10.22161/ijels>