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Unlocking the power of play: exploring the benefits of traditional games for adapted sports in people with cerebral palsy: a scoping review

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Abstract

Introduction. Adapted physical education is a viable way to improve physical activity in individuals with cerebral palsy. While there is adequate documentation on adapting western games, low- and middle-income countries may lack these resources. Traditional games deeply ingrained in these nations, can be played informally with minimal equipment. Adapting traditional games can be an effective way to increase activity and participation. This review presents the existing body of knowledge and identifies the benefits of traditional games in the context of adapting traditional games for individuals with cerebral palsy.
Methods: Two independent authors performed a systematic search of PubMed, Cochrane, PeDro databases and supplemented by manual searches. The initial search yielded 228 studies, 157 articles were excluded based on titles/abstracts, and 25 were excluded after a full-text review. Finally, a total of 11 studies were included in the review.
Results: The review results emphasized the ethnomotor perspectives and the health benefits of traditional games. The included studies were geographically diverse: 54.54% were from Asia, 36.36% from Europe, and 9.09% from the United States.
Conclusion: Traditional games have the potential to increase activity and participation. Adapting these games could serve as a cost-effective and culturally relevant approach to improve the health and well-being of individuals with cerebral palsy.
Key words: health benefits, cerebral palsy, adaptive sports

Introduction

Cerebral palsy is a group of permanent, but changing, movement and/or posture and motor function disorders resulting from a non-progressive disorder, lesion, or abnormality in the developing/immature brain [1]. Globally, the reported prevalence rate of cerebral palsy is around 1.6 per 1000 live births [2]. Individuals with cerebral palsy often have various complications, including disturbances in sensation, perception, cognition, communication, behaviour, and movement [2].

Physical activity promotes physical/social development and improves overall health-related quality of life in children with cerebral palsy by enhancing self-confidence, encouraging social interaction/inclusion, and reducing sedentary lifestyles [3]. The World Health Organization (WHO) reports that physical inactivity accounts for approximately 6% of global mortality and is the fourth leading risk factor for global mortality. According to WHO guidelines, physical activity of 45 to 60 min per day with a frequency of about three times per week is recommended for both individuals with and without disabilities [4].

However, individuals with cerebral palsy are often marginalized and unable to attain the recommended levels of physical activity. Physical barriers such as pain, limited mobility, and spasticity, as well as factors such as lack of movement awareness, lack of time, and lack of professional support, hinder, physical activity in individuals with cerebral palsy. Concerns about liability, lack of support from family members and peers, inadequate infrastructure and transportation, and a lack of adapted and community-based programs [5–8], especially enjoyable activities like play, games, and sports, are some of the other barriers that limit physical activity in individuals with cerebral palsy. This, in turn, leads to an increase in sedentary behaviour, resulting in poor cognitive, social, and motor development.

Therefore, adapted physical education could be a viable method to improve the activity and participation of individuals with cerebral palsy. Adapted physical education is an individualized program that includes physical and motor fitness, fundamental motor skills and patterns, and skills to meet an individual's unique needs [9]. The literature has shown that adapted physical education for individuals with cerebral palsy increases participation in sports and recreational activities, which promotes inclusion, minimizes deconditioning, optimizes physical functioning, and improves overall well-being [10].

There is adequate documentation on the adaptation of games in a Western context. Many of them are competitive Paralympic events [10]. Due to the high economic costs and a scarcity of professional players, low- and middle-income nations, particularly rural areas, may lack the necessary resources for Western games [11]. Hence, there is a need to identify cost-effective methods that are comparable in their functional areas to increase activity and participation.

Traditional games, widely practised in many cultures and civilizations, are an integral part of health and well-being. These games, so-called quasi-games or folk games, offer numerous advantages such as (a) no fixed rules (i.e. the gameplay is relatively open and customizable), (b) low-cost play materials, and (c) diverse health functions [12].

At present, we could not find any studies reporting the adaptation of traditional games for individuals with cerebral palsy. Understanding the benefits of adapting traditional games for individuals with cerebral palsy could pave the way for more inclusive and cost-effective physical activity programs tailored

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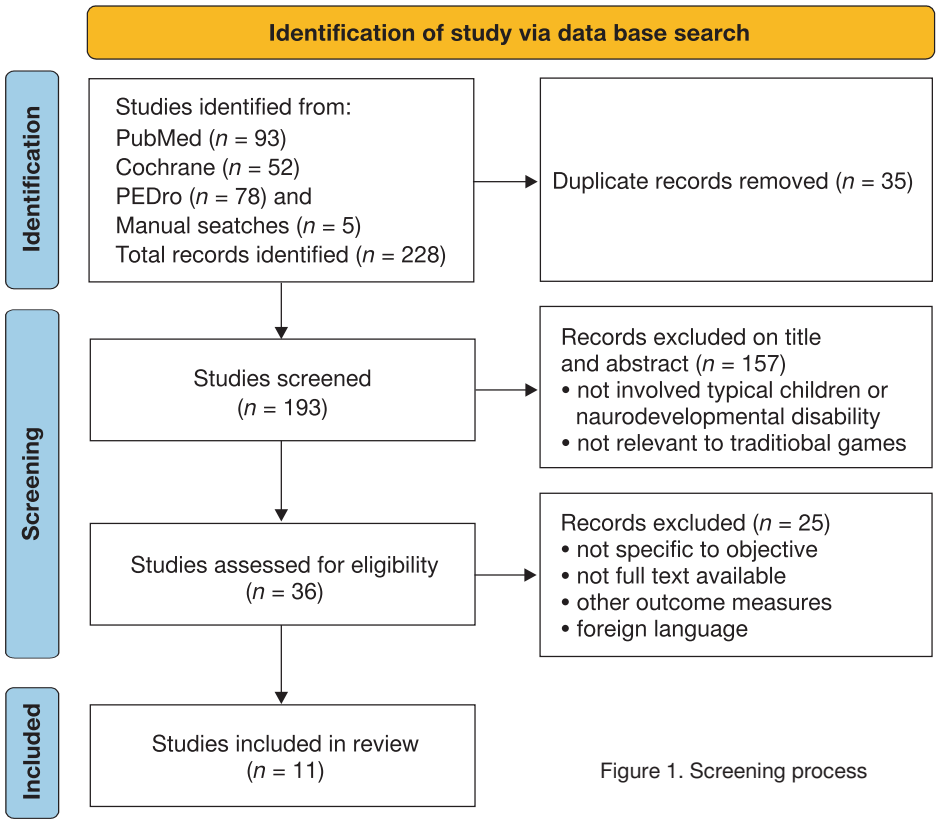

Figure 1. Screening process

to their specific needs. We conducted a scoping review to examine and review the available literature on the benefits of folk games, with a particular focus on activity and participation for individuals with cerebral palsy.

Subjects and methods

The Preferred Reporting Items for Systematic Reviews extension for scoping reviews (PRISMA ScR) checklist was used for this review. The objectives of the review, inclusion/exclusion criteria, and data acquisition and analysis were all predetermined and documented as part of an a priori protocol.

Search strategies

To identify and screen potential studies, systematic searches of three peer-reviewed databases (PubMed, Cochrane, and Pedro) were conducted between May 23, 2013, to July 1, 2023. In addition, a manual search was performed to obtain further information for the study. A senior librarian, who had about five years of experience in comprehensive literature searches, formulated the search string to capture the studies as broadly as possible. The following Medical Sub Headings (MeSH) terms were used: “child”, “adolescence”, “cerebral palsy”, “activity-based”, “participation-based”, “games”, “traditional games”, “adapted physical education”, “participation”, “physical activity”, “habitual”, “sport”, “leisure”, “recreation”, “exercise”, “fitness”, “motivation”, “goal attainment”, “attitude”, “behavioural change”, “behavioural change”. The required Boolean operators AND, OR, and NOT with wildcards were added accordingly.

The initial search identified 228 studies. After deduplication using Zotero 5.0 (reference manager), 193 articles remained for initial screening. Of these, 157 were excluded based on title and abstract. After reviewing the full text of 36 articles, 25 were excluded as not relevant to the study. Finally, a total of 11 articles were included in the review, achieving a minimum score of 60% using the Joanna Briggs Institute (JBI) critical appraisal tool. Figure 1 depicts the selection process using the PRISMA ScR flowchart.

The primary reviewer (MR) reviewed all titles and abstracts based on predetermined inclusion and exclusion criteria for this review. Upon completion, the lead author (MR) downloaded the relevant articles and two reviewers (MR, DJ) independently assessed the studies. All conflicts were resolved amicably between the reviewers, and a consensus was reached.

Inclusion criteria

Participants, concept, and context

Studies were deemed eligible if they met the following inclusion criteria: (1) Studies involving traditional games in relation to their health benefits, (2) studies addressing the ethnomotor perspective of traditional games that affects health (e.g., motor interaction, games with/without objects, and sociocultural contexts such as age/gender of the protagonist for the game, play area, and game preparation phase), (3) studies reporting the impact of traditional games on activity and participation in individuals with and without a neurodevelopmental disability, (4) studies published in English from May 23, 2013, to July 1, 2023, (5) quantitative/qualitative and mixed-methods studies of any type (observational, cross-sectional, randomized controlled trials, interviews, exploratory, concept analysis, and ethnographic studies) were included. Studies that included populations with diseases other than neurodevelopmental disability and studies that included Western gaming/virtual reality/video games were excluded. Additional studies published in languages other than English, dissertations, narrative reviews, conference proceedings, and other sources of grey literature were excluded from the review. The participant, concept, and context framework (PCC) for the scoping review, is summarized in Table 1.

Table 1. The participant, concept, context (PCC) framework for the scoping review

Inclusion criteria		Exclusion criteria
Participants	– healthy, able-bodied individuals over 5 years of age – individuals with neurodevelopmental disabilities – parents/guardians/caretakers of children and adults with normal as well as neurodevelopmental disabilities – coaches/teachers involved in the physical education of children – experts in the field of traditional games	individuals with chronic disease conditions such as obesity, congenital heart defects, and intellectual disabilities
Concept	traditional games for health benefits in neurodevelopmental disabilities	
Context	– studies reporting the ethnomotor perspective of traditional games – studies incorporating health components of traditional games – studies from all nations reporting the impact of traditional games on activity and participation – studies in English	dissertations, narrative reviews, conference proceedings, and grey literature were not considered

Data extraction

Data were extracted using a bespoke data extraction matrix. The data extraction sheet consisted of the following components: author, year, title, location, study design, study objectives, measurement tools, outcome/dependent variables, data analysis methods, key findings, and limitations/future scope (illustrated in Table 2).

Results

Ethnomotor perspectives of traditional games

The studies were geographically diverse, including those of Asian origin ($n = 6$; 54.54%), European origin ($n = 4$; 36.36%), and American origin ($n = 1$; 9.09%).

Objects

Objects used in traditional games play a key role in the game. In 33% of games, no object was used to play the game, 31% used objects from the home environment, and 14% used objects from the natural environment. Traditional games without objects are commonly played among women, while object-based games are prevalent among men [12, 13].

Motor interactions in traditional games

Sociomotor games (83%) were played more frequently than psychomotor games (17.38%). Sociomotor games emphasize social interaction, the cultural importance of community, and group dynamics between players while psychomotor games enhance the player's cooperation during the gameplay [12–14].

Age and gender

People of different ages participate in folk games. During childhood, 48.1% of children play games with objects, while 40.2% play games without objects. Traditional games with objects are prevalent in both adulthood and childhood [12].

More than two-thirds of the games were male games, while female games accounted for just 29% and mixed games accounted for 4%. The separation of the games was attributed to the gender division within society. In addition, 23.8% of women preferred traditional non-object gaming, and 12.9% preferred traditional object-based gaming. The majority of men (15.2%) showed interest in games with objects, while only 3.5% of men showed interest in games without objects [12, 13].

Play area

Traditional games were played outdoors 65.9% of the time, while 3.5% of traditional games were played indoors, and 30.5% of traditional games were played both indoors and outdoors. Furthermore, when selecting a play space, both cultural and social factors were considered [12]. The games took place in semi-domestic spaces near residences 75% of the time, which include large courtyards or playing fields and other spaces near the home [13].

Health benefits of traditional games

When we summarized the evidence, we found that traditional gaming has several health benefits. The cultural significance of folk games is to pass on oral traditions and can be adopted at a low cost with loose rules. These culturally diverse traditional games not only differ from each other globally but also in terms of the predominant functions in each game. Gross motor function (strength, range of motion, endurance, and balance), fine motor function (grasping/releasing objects during play, visual motor skills, bimanual activities, and in-hand manipulation), communication function (verbal and speech modulation), and cognitive functions (attention, problem-solving, and conflict resolution) are specific functional dimensions enriched with traditional games. In addition, features such as sitting stability, neck mobility, breath control, and trunk strength/flexibility are additional benefits over traditional games. In sitting games, cognitive behaviour, communication, and fine motor skills dominate, while in dynamic games, multiple functional areas are involved, and there is a greater emphasis on gross motor skills [15].

Moderate-to-vigorous intensity physical activity (MVPA) directly impacts children's motor skills. Traditional games played 20 min a day at moderate to vigorous intensity increase a child's physical activity level. The intensity of traditional games depends on various factors, namely the characteristics of the games, the size of the play area, and the length of the game [15]. Traditional games are effective in improving components of physical fitness, such as agility, reaction time, speed, and balance [16].

Traditional games are rich in dexterity functions as 91% of traditional games have dexterity functions, while 16% of them are contact games such as hide-and-seek and tickle games. Traditional games to develop motor and social skills remain popular. In 47.5% of children aged 7 to 12 and their parents (58.2%) played traditional games that focused on motor functions [17]. When practised on a random schedule, traditional games improve a child's gross motor skills, preserve cultural elements, and foster a child's bonding within communities, i.e. enhancing children's social skills [17].

Table 2. Study characteristics

Author, year	Title	Location	Study objectives	Study design	Population/ subjects	Measurement tools used	Outcome/dependent variables	Data analysis method used	Summary	Limitations/ future scope
Hussain and Cheong, 2022 [18]	Improving gross motor skills of children through traditional game skillspractised along the contextual interference continuum	Pakistan	to investigate the effectiveness of traditional cultural games (TCG) on the acquisition and retention of gross motor skills using two different contextual interference (CI)	repeated measures design	healthy, able-bodied primary school children aged 7–10 years (n = 103)	skill performance test to assess the game task and game transfer test to measure the performance and skills acquired by the participants during the transfer phase of the game	children's gross motor skills at three different phases of play	Split-Plot Analysis of Variance (SPANOVA) was used to analyse repeated measures	Traditional culture games are better suited for the acquisition and development of gross motor skills in children when practised in a closed environment with high contextual interference	Physical education teachers and coaches can be educated on developing gross motor skills using high contextual interference. National governing bodies, parents, and teachers can take the necessary steps to encourage traditional culture games (TCG) to increase participation Pittu Garam, a TCG, a popular game in Pakistan, was used as an intervention to improve the GMS, while other games were not included. TCG from different provinces, cultures, and countries can be studied
Kacar and Ayaz-Alkaya et al., 2022 [19]	The effect of traditional children's games on internet addiction, social skills, and stress levels	Turkey	to determine the effect of traditional children's games on internet addiction, social skills, and stress levels	a pre-test/ post-test control group design	fifth and sixth graders aged 8–11 (n = 34)	The Social Skills Assessment Scale for measuring social interaction skills The Family Child Internet Addiction Scale to assess children's internet addiction status The Perceived Stress Scale in Children measures children's stress levels	children's daily and weekly internet use, social skills, and stress levels	χ^2 = chi-square test for between-group comparisons and χ^2 = McNemar test for within-group comparisons	Traditional children's games improve social skills such as speaking, thinking, sharing, socializing, problem-solving, helping, and interacting with the environment, and show no differences in stress levels and internet addiction	Health professionals/ parents can be educated on the benefits of traditional children games and focus on them in collaboration with the school community
Luchoro-Parrilla et al., 2021 [12]	Traditional games as cultural heritage: the case of Canary Islands (Spain) from an ethnomotor perspective	Spain	to study the characteristics of traditional sport games from an ethnomotor point of view to determine the predictive strength of the variables that conform to the rules and sociocultural context of traditional games	ethnographic study	513 traditional sports games enriched with motor skills	classification of traditional games based on etnomotor traits	ethnomotor diversity of traditional games in terms of (a) rules of the game, (b) motor relationships of the game, (c) materials used in the game, (d) scoring system, (e) games intended for the child's age, (f) games for men, women, or mixed genders, and (g) play area/ space required for the game	content analysis of written published sources field notes gleaned through video and audio documented semi-structured interviews	The traditional object games are predominantly psychomotor and can be played both indoors and outdoors. Games with no fixed rules but with objects, foster the participant's curiosity and motor creativity. No-object games are mainly played by girls, while object-based games are played by both sexes	An in-depth analysis of girls and boys during play would enrich the cultural baggage hidden in traditional games and also reveal the ethnomotor consequences resulting from the play

Hartanto et al., 2021 [20]	Integrating social skills in traditional games with physical education interventions	Indonesia	to investigate the differences in the level of social skills of students when treated with traditional games	a randomized control trial	*n* = 360, elementary school students	modified Grade 7–12 Social Skills Questionnaire	children's social skills	two-way ANOVA to analyse the interaction effect of social elements/cultural background on social skills independent-sample *t*-test to identify the differences in social skills in games with and without social elements one-way ANOVA to identify within-group differences	Traditional games with social elements show higher levels of social skills in elementary school students than traditional games without social elements A strong relationship exists between game types and cultural/ethnic backgrounds that affect the children's social skills	Incorporating traditional games with social value into the curriculum will improve physical education learning for elementary school children
Alcaraz-Munoz et al., 2020 [14]	Joy in movement: traditional sporting games and emotional experience in elementary physical education	Spain	to assess players' experiences in competitive and non-competitive traditional games in different motor domains	a descriptive and cross-sectional study	152 elementary school students aged 8–12 (72 boys and 80 girls)	Games and Emotions Scale for Children (GESC) is used to examine the two factors of emotions – positive emotions and negative emotions that influence the motor praxeology of the game	type of emotion that affects the motor action of traditional games type of emotion that affects sports performance	student's *t*-test for independent samples with two groups, and one-way repeated measures ANOVA for more than one group content analysis for the qualitative part	Game rules (28.5%) and time (21.3%) are the main internal logic variables and the participants (23.6%) are the external logic variables affecting the game Non-competitive games are better suited to physical education classes when children have serious difficulties in performing their motor skills	Traditional games can be studied on different age groups and diseased/disabled individuals
Adnan et.al, 2020 [21]	Quantification of physical activity of Malaysian traditional games for school-based interventions among primary school children	Malaysia	to determine the intensity level of selected traditional games to improve physical education sessions among primary school children	a cross-sectional study	primary school children (*n* = 30, 5 boys and 5 girls of each age group 9–11 years)	the step count and vector magnitude of motion are determined by the GT3X+ accelerometer. The level of intensity for traditional games is measured based on the cut-off points of step count heart rate was recorded with a Polar heart-rate monitor, while MET's were calculated from the step count data based on Freedson's equation	step count, heart rate (HR) and Metabolic Equivalent (MET's) of each traditional game level of intensity of selected traditional games vector magnitude of traditional games	one-way ANOVA to compare the step count, heart rate, MET, vector magnitude, and intensity level post-hoc Tukey's test for multiple comparisons between the variables	PA intensity is based on the specific activity of the game Playing traditional games for 20 min as a school-based intervention achieves the required MVPA and may be a way to increase PA in primary school students	All participants were from the northern regions of Malaysia; Therefore, future studies on different demographic groups are required

Nefil et al., 2020 [13]	Traditional games and sports for women in the Kabylie	France	to understand the nature of traditional games in terms of socialization between boys and girls	a survey study	a corpus of 92 traditional games was selected by bibliographic search and field survey	sociological tools for game description and game function identification, including participant observation, field notes, and semi-directive interviews	structures of traditional games and their ethnomotor characteristics	S3 Simplex (for improved resource visualization) was used for game classification and distribution	In addition to gender segregation, games are carriers of culture and socialization Girl's games are mostly circle games, approach games (hide and seek), or carry games (carrying on the back, on the shoulders, carrying a player from one place to another), while the boy's games are mostly ball games, fighting games, or target games that require physical skills, especially motor skills	Only game structure/ distribution and some ethnomotor variables were examined. The survey on the health benefits of these games could be of future importance
Rahman et al., 2020 [15]	Listing of Indian folk games for potential therapeutic benefits in children with neurodevelopmental disabilities	India	to explore the potential therapeutic benefits of traditional Indian folk games	an exploratory study	10 commonly played traditional Indian games	the operationalized conceptual model was used for the theoretical analysis	the functional components of each folk game are under the domains of cognition, communication, gross motor, and fine motor skills	games were rated using a six-point Likert scale based on an operational conceptual model	Traditional games have the adaptive potential to provide therapeutic benefits for children with neurodevelopmental disabilities Folk games are played by people of all ages, and therefore, adults in the family can engage children with neurodevelopmental disabilities outside of school hours	Only Indian folk games have been included, and other games from various parts of the world can be rated using the existing conceptual model
Eymann et al., 2019 [17]	Jacks and other dexterity games in children and their parents	Argentina	to assess the dexterity games played by children and their parents in general, and jacks in particular	a survey study	families with children aged 5–12 years (n = 109, 87 mothers and 22 fathers)	a customized questionnaire designed by clinicians	% of parents/children who played jacks in their childhood age at which parents played jacks/dexterity games % of parents who taught their children how to play jacks children's favourite childhood jacks/ dexterity games	categorical data were described as absolute values and frequencies, while continuous variables were described as mean and standard deviation. The degree of association is determined using the χ^2 test	91.7% of parents had played jacks, but only 4.6% of their children had played it Traditional games, like jacks, are on the decline among the newer generations Traditional games help to develop education and maintain motor or social skills Playtime is limited in the urban population	Includes only urban families with a high level of education, so the results cannot be extrapolated to other social groups

Charles et al., 2017 [16]	The effectiveness of traditional game intervention programs in the improvement of school-age children's motor skills-related performance components	Malaysia	to study the effectiveness of the traditional games intervention program on motor skills in school-aged children	a preliminary study	40 children aged 12–14 [boys (n = 20) and girls (n = 20)]	motor fitness performance tests included the 30-meter sprint test, 505 agility test, modified Bass test for dynamic balance, and Nelson reaction times test	motor performance components (agility, reaction time, speed, and balance)	multivariate analysis of variance (MANOVA) repeated measure was used	Traditional games are effective in improving each component of motor fitness, i.e., agility, reaction time, speed, and balance of school-aged children	Traditional games can be used by coaches, physical education teachers, and any other physical fitness practitioner to improve motor fitness Implementation studies can be conducted in the future to elucidate the findings of this study on a larger scale
Anastasovski et al., 2016 [22]	Role of traditional games and sports in social and ethnical inclusion, integration and cohesion in the post-conflict and transitional societies among children of elementary schools	North Macedonia	to explore the role of traditional games and sports in social and ethnic cohesion, inclusion, and integration	a survey study	school-age children from 9–13 years (n = 208)	survey questionnaire	social and ethnical inclusion, integration, and cohesion of elementary school children	frequency and percentage analysis	Traditional games i ncrease social integration, tolerance, and mutual respect and strengthen the children's cohesion	Long-term effects on social and ethnic integration can be studied Use of mixed methods such as surveys and questionnaires, interviews, and focus group discussions for in-depth analysis Potential factors influencing social and ethnic inclusion, cohesion, and integration, such as socioeconomic/educational status, can be examined

Traditional games and cultural backgrounds combine to influence a child's social skills. Traditional games encourage a children's social skills when played over a period of 8 weeks [18]. Traditional games with social elements integrated into regular physical activity usually reconstruct various social competencies, develop motor skills, and promote a healthy lifestyle in children [19, 20].

Discussion

In this review, we aimed to correlate the available evidence on traditional games to explore the benefits of adopting these games to improve activity and participation in individuals with cerebral palsy. The review identified eleven relevant studies from different geographical origins, namely Asian, European, and American origins. Although the studies were conducted in different geographical locations, most studies were of Asian origin. Recent studies elucidate that Asian nations are embedded with a variety of indigenous games with unique elements that differ from game to game and are interwoven into everyday life, with a blend of creativity and entertainment being a central part of child-rearing practices [23, 24]. This is relevant for individuals with cerebral palsy as well. When synthesizing the available evidence, we found that traditional games have a high potential to promote physical activity, motor development, social interactions, and communication skills in individuals with cerebral palsy (Table 3).

The results of the studies provided insights into the ethnomotor perspectives and health benefits of traditional games affecting activity and participation in individuals with and without neurodevelopmental disabilities. Traditional games are deeply rooted in different cultures around the world, i.e., each nation has its own set of traditional games. The type and nature of games between nations vary due to numerous factors such as geographical location (various play surfaces), environmental factors (temperature variations, day/night cycles, and weather changes), and the general social attitudes of the public [18].

The use of play objects in traditional games enhances the children's motor interactions. The objects required for gameplay can be obtained from local culture, i.e. materials within the local domestic/ home environment [12]. In addition, traditional games (both outdoor and indoor) can be played in domestic spaces, e.g., house corridors, and other spaces in and around the home [12, 13]. This adds a cost-effective dimension to game adaptation and makes a feasible game environment for individuals with cerebral palsy to improve motor interactions and promote inclusiveness. Age and gender are the two predominant factors influencing participation. Traditional games are abundant in nature and are categorized by game logic, taking into account the age and gender of the protagonists [12]. The distribution of games by age and gender is due to different customs, thought processes, and socialization. Grouping people by similarities for the gameplay could increase the participation of people with cerebral palsy [13].

The study results unequivocally demonstrate the benefits of traditional games, notably for the development of the individual's health, namely social, gross/fine motor function, cognition, and communication function. Dynamic traditional games provide consistent evidence of a significant functional contribution to health in more than 70% of the games compared to sitting games [15]. Individuals with cerebral palsy have varying degrees of functional limitations (e.g., difficulty in transition positions, trunk bending, reaching activities, and moving from one place to another) depending on the type and severity of the condition [22]. Selecting traditional games based on impairments and individual functional needs can

Table 3. Ethnomotor perspectives and health benefits of traditional games: A – ethnomotor perspectives: summarizes the importance of low-cost materials for traditional games, the level of moor interactions, and age and gender characteristics of traditional games, B – health benefits of traditional games: summarizes the various health functions embedded in traditional games, the hand/dexterity functions for different functional levels of cerebral palsy, and the role of traditional games for social skills and activities and participation in cerebral palsy

A. ETHNOMOTOR PERSPECTIVES		B. HEALTH BENEFITS	
Materials used Low cost materials Available from domestic spaces	**Age and gender protagonists** Played by ball ages and both gender Categorised by games logic	**Health functions** Dynamic games (gross motor > fine motor) Sitting games (finemotor/ cognition/communication > gross motor)	**Hand/Dexterity** Indoor games > outdoor games Potential for GMFCS level 4 and 5 > level 1 and 2
Motor interactions Sociomotor games > psychomotor games Increases social/ interaction group dynamics	**Play area** Use of domestic/semi domestic spaces Chosen based on cultural/ social factors	**Social skills** Interactions with peer Promotes self esteem Improves leadership skills	**Activity and participation** Improves physical activity Reduces sedentary behaviours and promotes healthy life style

be beneficial for a person with cerebral palsy. For example, individuals with cerebral palsy of Gross Motor Functional Classification level 1 (GMFCS level 1) are mildly affected [22, 25–28] and require a set of games that can be played by normal individuals with minor modifications to the game. For those with GMFCS levels 4 and 5, sitting games that focus on cognition, social interactions, and joy might be the appropriate choice. In addition, gross motor skills, an essential part of functional movements [29], can be optimized by a variety of traditional gaming skills when played on a regular basis [18].

MVPA affects motor skills and is, therefore, crucial to encouraging participation [30, 31]. The goal and intensity of each traditional game vary and reinforce different aspects of physical activity, such as directions of movement, fine motor skills, cardiovascular fitness, and energy requirements [21]. Implementing traditional games with specific intensity levels based on the abilities and physical demands of individuals with cerebral palsy will improve their physical activity.

Social skills enable people to engage and socialize with others in society while also fostering self-esteem and self-confidence. Limited recreational opportunities, lack of social interactions, and lack of acceptance by peers for play, will impair the social skills of individuals with cerebral palsy [32, 33]. The culturally ingrained traditional games are proven effective in improving social skills, social behaviour, leadership skills, and self-expression [19, 20]. Thus, the adaptation of traditional games will promote inclusiveness and social integration in individuals with cerebral palsy.

Strength and limitations

The pragmatic approach of analysing and integrating the available evidence on ethnomotor perspectives and health benefits of the traditional game can be considered a strength of the study. However, some limitations are noteworthy: (A) Although traditional games vary geographically, the majority of the studies were of Asian origin (54.54%). This might limit the generalizability of the results to other areas and cultural contexts; (B) The PEDro database does not have a combination search functionality, so the search was performed using each concept individually to retrieve articles; (C) Due to the limited availability of literature in this particular research area, it is necessary to include a diverse set of sources, including quantitative, qualitative, and mixed methods studies. Therefore, future studies with a comprehensive evaluation of literature in the same context are recommended.

Conclusion

Traditional gaming has several health benefits. Adapting these games could be a cost-effective and culturally relevant strategy to promote the health and well-being of people with cerebral palsy, particularly in Asian nations.

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Ethical approval

The conducted research is not related to either human or animal use.

Informed consent

Informed consent has been obtained from all individuals included in this study.

Disclosure statement

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Conflict of interest

The authors state no conflict of interest.

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