

People with Physical Disabilities playing Light Volleyball: A Qualitative Study in Hong Kong

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ABSTRACT

Purpose: *This study aimed at understanding the perceptions of people with physical disabilities regarding playing Light Volleyball (LVB), identifying the possible constraints and risks they might face while playing, and providing their suggestions for fine-tuning the Light Volleyball intervention programmes.*

Method: *Four focus group interviews were conducted with 17 participants who joined the Light Volleyball trial programme. The participants were 11 males and 6 females, with an average age of 53.5 years (SD=11.83 years). People with poliomyelitis (n = 15), spinal cord injury (n = 1), hearing impairment (n = 1) were included.*

Results: *Participants indicated improved reactivity and coordination, cooperation in team, happiness, and novelty in general as positive outcomes while playing Light Volleyball. They preferred to play in the seated position (i.e., sitting light volleyball - SLVB), and with simpler rules. They believed that their ability to play Light Volleyball was subject to their body constraints.*

Conclusion: *Sitting Light Volleyball can be one of the new physical activity options for future sport promotion among people with physical disabilities in the community. The effectiveness of playing Sitting Light Volleyball in enhancing health among people with physical disabilities needs to be studied in future.*

Key words: *adapted physical activity, special populations, physical impairments, focus group*

INTRODUCTION

In Hong Kong, the prevalence rate of people with physical disabilities has increased from 2.72% in 2007 to 4.47% in 2013, particularly the result of the

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increase in the ageing population (Census and Statistics Department, HKSAR, 2014). The World Health Organisation (2015) encourages the organisation of accessible health promotion programmes for people with physical disabilities. The benefits of engaging in regular physical activity (PA) are well recognised. However, people with physical disabilities tend to participate less in physical activity (de Hollander & Proper, 2018) and have poorer health status (e.g., they experience more cardiac diseases and diabetes) than their peers without disability (Rimmer et al, 2007; Reichard et al, 2011).

A study in Hong Kong, that examined sport participation among people with disabilities, revealed that there are few sports available to them. People with disabilities who were interviewed demonstrated that people with physical disabilities have fewer opportunities to participate in PA than people with intellectual disabilities (Home Affairs Bureau, HKSAR, 2016). The study identified a service gap to provide more types of sports or implement more physical activity interventions for people with physical disabilities in Hong Kong.

Sitting Volleyball (SVB), an official Paralympic sport, is particularly fast and explosive in movement (Di Palma & Molisso, 2017). Athletic ability and strength are generally required (Vute, 1999). Thus, SVB is a high-level competitive team sport demanding power and agility, which suits people with disabilities who have high sport competence.

LVB, using a bigger and lighter ball, is a relatively common PA for older adults in China (Sun, 2010). In 2018, Leung and colleagues conducted a LVB intervention among older adults, aged ≥ 60 years, in Hong Kong. LVB was found to be beneficial to older adults' physical and psychological health (Leung et al, 2018). The pilot intervention study suggested that future studies should investigate LVB in other populations with lower fitness levels (e.g., people with physical disabilities).

Objectives

Keeping in mind the higher physical competences (e.g., speed) needed while playing SVB, the potential health benefits of LVB for people with physical disabilities, and the service gap to provide people with physical disabilities in Hong Kong with more types of sport and PA interventions, this study aimed at:

- a) Understanding the perceptions of people with physical disabilities regarding playing LVB;

- b) Identifying the possible constraints and risks they might face while playing; and
- c) Providing their suggestions for fine-tuning the LVB intervention programmes for people with physical disabilities.

METHOD

Study Design

This qualitative study used trial sessions and focus group interviews to understand the perceptions of people with physical disabilities regarding playing Light Volleyball and to identify the possible constraints and risks they might face while playing.

Participants

The study was conducted in June 2018, as part of the Sitting Light Volleyball (SLVB) intervention project. Before the intervention programme, two trial sessions of a LVB game were organised for persons with disabilities from a partnering non-government organisation (NGO). The NGO was responsible for recruiting participants through WhatsApp groups and advertisements in their bimonthly magazine. Seventeen participants (n=17) of the LVB trial programme were invited to join the study.

The inclusion criteria were:

- (a) Those who spoke in Cantonese, and
- (b) Participated in the LVB trials.

Among the 17 participants, there were 11 males and 6 females, with an average age of 53.5 years (standard deviation=11.83years). People with poliomyelitis (n = 15), spinal cord injury (n = 1), hearing impairment (n = 1) were included. Of the total number of participants, 70% had secondary school-level education and 24% had university-level education or above. All of them had no prior experience in playing LVB.

Procedures

Details of the trial runs were confirmed after the enrolment of participants. The participants were first given a briefing on the objectives of the study, their involvement, confidentiality, potential risks of participation, and their option to leave the study at any time. Two trial sessions of a LVB game were organised and the participants were free to play LVB either in their own wheelchairs or in the sitting position under the supervision of coaches from the related NGO. With the inputs from the stakeholders (including participants and the partner NGO), some suggested game characteristics and rules were discussed and subsequently modified.

Data Collection

After each trial session, the participants were divided into two small focus groups to conduct interviews for the purpose of (a) understanding the perceptions of people with physical disabilities regarding playing LVB, (b) identifying the possible constraints and risks they might face while playing LVB, and (c) providing their suggestions for fine-tuning the LVB intervention programmes for people with physical disabilities. Questions were asked in an interactive group setting where participants were free to talk with other group members. During this process, the researchers took notes to capture participants' characteristics and information about group dynamics. Typically, interviews lasted 45 minutes. An HKD\$100 supermarket cash voucher was given to the participants to acknowledge their contributions to the study.

The first author, with a trained research assistant, acted as the focus group moderator. Focus group interview is frequently used as a qualitative approach to gain an in-depth understanding of social issues. This method aims to obtain data from a purposely selected group of individuals rather than from a statistically representative sample of a broader population. Focus group interview enables researchers to interview multiple respondents simultaneously (Babbie, 2011) and is widely used to identify consumer needs that will assist in the development of future intervention programmes (Halcomb et al, 2007). Given its convenience, speedy results, high face validity, and cost effectiveness, it is commonly applied to generate data because of its purposeful use of social interaction (Krueger, 1988; Merton et al, 1990; Morgan, 1996). Focus group interview was adopted in this qualitative study because LVB is a group-based activity, and information about the group dynamics in this activity can be well captured through focus group interviews.

Data Analysis

All the interviews were audio-taped and transcribed verbatim by a research assistant. The transcript was checked by another research assistant. All participants were assigned an identification number for data reporting. All transcripts were then analysed through inductive thematic analysis, which is for identifying, analysing, and reporting patterns (themes) within data (Frith & Gleeson, 2014). This analysis process included (1) data familiarisation, (2) generating initial codes, (3) collating codes into potential themes, (4) refinement and review of themes, (5) defining and naming themes, and (6) finalisation of themes (Braun & Clarke, 2006). Through discussion meetings at regular intervals, authors developed a thematic framework containing key themes. This framework was then applied to data analysis, though the themes were reviewed and modified in the aforementioned six phases.

Ethics

Through a cover letter stating the details of the study (e.g., aims and procedures), consent was obtained from the person-in-charge of the partner NGO serving people with physical disabilities in Hong Kong. Informed consent was obtained from all individual participants included in the study. They gave their consent and participated in four focus group interviews (in groups of four or five). All procedures performed in studies involving human participants were in accordance with the ethical standards of the University Institutional Review Board and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

RESULTS

Participants' Perceptions about Playing Light Volleyball

Improved reactivity and coordination, cooperation in team, happiness, and novelty were positive outcomes in general perceived by the participants who played LVB.

When asked how playing LVB could benefit their body, the participants gave different answers.

One participant said, *"It seems to improve my reactivity and coordination of my body and mind. In the longer run, I think it could enhance cooperation among team members."*

Another participant explained, *"I feel happy to play together."*

One of the participants echoed, *"It is my first time playing LVB. I feel good and fun-full. I will continue to play."*

Another participant reflected, *"It's new to me, I never come across playing Sitting LVB!"*

Playing LVB in a Wheelchair versus in a Sitting Position

Focus group interviews revealed that participants with higher mobility (lower level of disability) enjoyed playing LVB in the sitting position, whereas those with lower mobility (higher level of disability) felt more enjoyment while playing LVB in a wheelchair.

One participant said, *"I prefer playing in a sitting position because I can crawl freely on the floor."*

Another participant echoed, *"With my higher mobility, I like sitting on the floor. I can't manage to play and control my wheelchair concurrently. I feel free while playing on the floor."*

In addition to the sense of freedom, playing on the floor necessitated a larger amount of exercise and better judgment of the directions and positions of the ball.

Three participants reflected, *"Playing on the floor demands a greater amount of exercise, like running with our hands. ... We could better judge the directions and positions of the coming ball in a sitting position. This enables us to have a better control of when and where to receive, set, and hit back the ball. ... Relative to playing in a wheelchair, playing on the floor necessitates higher mobility and more exercise and hence strengthens our legs, lumbar, and even the whole body."*

A few participants with a weak lumbar region and higher level of disabilities enjoyed playing in a wheelchair.

One participant with serious disability reflected, *"I think it is a matter of mobility. Amputees and players with light polio can move better on the floor. However, for players with higher level of disabilities like me, we can play better in our wheelchairs. I am sure we can play and progress well."*

Another participant commented, *"I am good at controlling my wheelchair, even moving up and down staircases.... Given time and after mastering the techniques, I am pretty sure we can play well in our wheelchairs."*

Constraints and Potential Risks in Playing LVB

Body Constraints

Participants who could not sit self-supported on the floor enjoyed playing in wheelchairs as this gave them support and mobility. Some participants opined that their ability to play SLVB was subject to their body constraints.

One participant reflected, *"It really depends on your health status. Even with my relatively strong hands and lumbar, I don't know where and how to put my legs. It's really inconvenient. Owing to polio, I can't control the movement of my leg. It is difficult to move."*

Another participant who had spinal cord injury explained, *"My hands tremble when I receive a ball. Trembling starts when I stretch out my hands. I can't touch the ball."*

One participant said, *"I cannot sit properly. I can sit, but when I move, I will shake like a salmon."*

Safety Concerns

Safety is a concern when playing sports, particularly for people with relatively low fitness levels as their disability conditions posed a potential risk while playing SLVB.

One of the participants revealed, *"Sometimes, I was hit by the ball. Sometimes, I bumped into my teammates."*

When asked if their limbs and elbows were vulnerable to injury, some participants opined that potential risks could be reduced by wearing protective gear.

One participant said, *"We could protect our elbows from being hurt by wearing protective pads."*

Another participant echoed, *"We should also protect our degraded buttocks by wearing thicker trousers."*

Some participants opined that SLVB was comparatively safer than other wheelchair sports because it was non-impactful.

"Compared with traditional volleyball, which is heavier and harder, LVB does not hurt much even we hit it hard....The chance of getting hurt is lower when compared with playing traditional volleyball where one is easy to hurt his/her fingers."

Suggestions for Fine-tuning Future LVB Intervention Programmes

Many participants suggested simpler rules, tailored according to the nature and levels of their disabilities, so that they could enjoy playing LVB either in a wheelchair or in a sitting position. One participant suggested that the ball should be allowed to bounce at least once in each pass.

Another participant echoed, *“To cater for players with lower activity level (e.g., players using electric wheelchairs), we had better allow the ball to bounce twice in each pass.”*

Yet another participant commented on the rules of the game, *“We have different nature and levels of disabilities. It would be better if the net levels could be adjusted to cater proportionately for players sitting in wheelchairs and on the floor.”*

One participant reflected, *“As beginners, it is too rush for us to allow merely three passes. We had better have four passes initially and then fall back to three passes once we are used to playing SLVB.”*

Another participant opined, *“To make the best use of each team member’s functional ability, we should allow free sitting positions up to the decision of the players while practising to serve by rotation.”*

One of the participants suggested, *“To ensure level playing, formation of teams should be subject to the classification and point systems adopted for wheelchair basketball. In other words, each team should comprise a mix of players with comparable levels of disabilities defined by a ceiling point of the whole team (optional to have one able body).”*

Another participant, who agreed that having an able-bodied person as a team member would be beneficial, said, *“...having the coach play in the team will facilitate our learning and practising of the techniques.”*

DISCUSSION

Participants’ Perceptions about Playing LVB

Sports participants have a positive correlation with and a higher level of enjoyment than participants in other leisure activities (Hills & Argyle, 1998; Ruseski et al, 2014; Balish et al, 2016). LVB, being an interactive team game, requires players to move in different directions and react swiftly. Agility and dynamic balance are therefore crucial. Hedrick (2007) reveals that dynamic defensive and offensive movements occupy more than half of the total game time. It also means that cooperation in team is a must to organize the offense and defense in team. This

is in line with the systematic review that team sport involvement was positively associated with improved teamwork, better mental health, including happiness (Eime et al, 2013). The current study's interview results were consistent with the aforementioned research results that participants deemed novelty, enjoyment, improved reactivity, and coordination, cooperation in team as positive outcomes.

Consistent with previous findings, the current study revealed that new activities were one of the elements, with respect to the attitude of people with physical disabilities, for an effective community-based PA intervention (Krops et al, 2018). Adopting a softer, lighter, and bigger ball and tailored rules for SLVB was a novelty to the participants. They were interested in finding out how it is played and whether they could manage to play SLVB.

Playing LVB in a Wheelchair versus in a Sitting Position

The results indicated that players with higher mobility (lower level of disability) enjoyed playing LVB in the sitting position, whereas those with lower mobility (higher level of disability) preferred playing LVB in their wheelchairs. Considering that players could be better able to judge the directions and hit the ball at different positions when sitting on the floor, and that they had higher mobility and got more exercise, playing LVB in a sitting position was preferred to playing in wheelchairs. This preference might refer to body autonomy - a wish to be able to control one's own life and act in harmony with one's self; however, Deci and Vansteenkiste (2004) indicated that this does not mean to be independent of others. Body autonomy is regarded as an obstacle to people with physical disability in their struggle for independence (Carolyn, 2001). Owing to obstacles such as transportation and the physical environment, they feel that they are unable to act for themselves and control their own bodies and lives (Carolyn, 2001). Conversely, some participants reflected positively that playing LVB in the sitting position helped them attain body autonomy and a sense of freedom.

Constraints and Potential Risks

Body Constraints

People without limbs or with deformity of limbs are considered to have a higher ability to play SLVB, because their spinal cords are healthy, than those with muscular dystrophy and spinal cord injury whose muscles and spinal cords do not provide self-support, which may affect their body balance and may cause

further injuries when sitting on the floor (The Handicaps Welfare Association of Singapore, 2018). Similarly, the current study revealed that the ability of the participants to play SLVB was subject to their body constraints. Participants who could not sit on the floor independently preferred playing in wheelchairs, which provided them support and mobility. Future LVB intervention programmes may request participants capable of sitting unsupported on the floor to do so.

Safety Concern

Safety concern, often cited as a barrier for the people with disabilities participating in PA, should not discourage them from being active at a suitable level and intensity (Public Health England, 2018). Players with low fitness levels may hurt their elbows and buttocks if they do not play properly. Nevertheless, the potential risk of hurting themselves could be reduced with protective gear.

Suggestions for Fine-tuning Future LVB Intervention Programmes

Considering the different nature and levels of disabilities, many participants suggested adoption of simpler and tailored rules. Relaxed rules (e.g., lower net and allowing the ball to bounce once in each pass) at the initial stage enabled them to pick up the techniques of playing SLVB easily and allowed them to enjoy playing the game while seated either in a wheelchair or in a sitting position.

Limitations and Recommendations

To the best of the authors' knowledge, this is the first ever qualitative study to examine the perceptions among people with physical disabilities about playing LVB. The focus group interview was a simple and time-effective way of gaining a preliminary understanding of the participants' perceptions that novelty, happiness, improved reactivity, and coordination were positive outcomes. Interview results revealed that playing LVB in the sitting position was preferred to playing in wheelchairs.

However, limitations to this study exist. First, all the participants came from the same partner NGO, which might lead to groupthink. Generalisation, may therefore be limited. Second, compared with individual interviews, focus groups are not as efficient in covering the maximum depth on a specific issue. A particular disadvantage of a focus group is the possibility that the members may not be honest in expressing their personal opinions about the topic at hand. They may

be hesitant in expressing their thoughts, particularly when their thoughts oppose the views of another participant.

Despite these limitations, the primary strength of this study is that it is the first to explore the suitability of playing SLVB among people with physical disabilities. The effectiveness of playing SLVB on health benefits among people with disabilities is a subject for future study. Furthermore, the content of this study is informative for developing future SLVB interventions and programmes for people with physical disability.

CONCLUSION

To reiterate, this qualitative study aimed at (a) understanding the perceptions of people with physical disability regarding playing Light Volleyball, (b) identifying the possible constraints and risks they might face while playing LVB, and (c) providing their suggestions for fine-tuning the intervention programmes.

In particular, this study gained a preliminary understanding of the perceptions and experiences of people with physical disabilities in the Light Volleyball trials for the refinement of the subsequent Sitting Light Volleyball intervention programmes.

When LVB is played among people with physical disabilities, the participants' body constraints and safety concerns must be considered, and the rules of the game must be tailored in accordance with the participants' body conditions and their skill levels at different stages of the intervention programme. Notably, the results of this study indicated that the effectiveness of playing SLVB on health benefits among people with physical disabilities needs further study. Also, SLVB can be one of the new physical activity options for future sport promotion among people with physical disabilities in the community.

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