

## Research Assessment Exercise 2020

### Impact Case Study

**University:** [The Education University of Hong Kong |

**Unit of Assessment (UoA):** [40 Physical education, sport, recreation & physical activities |

**Title of case study:** [Improving the fitness and health of Hong Kong kindergarten children |

#### (1) Summary of the impact

[There is increasing recognition globally that physical activity (PA) and fitness among children is an indicator of their future levels of activity, fitness and health in adulthood. However, in many developed societies children and young people have become less active, as play and sport compete with “screen time” and schools and families prioritise academic study over PA, among other factors, affirmed in Hong Kong in research conducted at EdUHK. There, government studies have shown that just 10% of kindergarten children take part in the minimum recommended 180 minutes of PA a day for their healthy development. Prof Joanne CHUNG Wai-ye addressed this issue as the research consultant on a large scale collaborative project led by the Physical Fitness Association that has increased physical fitness literacy among more than 19,000 children and their parents and resulted in some improvement in the physical activity levels of children aged 3 to 6. The project has led to new pedagogy involving PA across the curriculum in the 97 pilot schools and others in Hong Kong that it has reached. |

#### (2) Underpinning research

[The concept of physical fitness has evolved from concern for motor and strength performance to a health-related focus as evidence increases of the importance of PA for health, and the links between levels of physical activity in childhood and adulthood. Cardiorespiratory fitness, muscular strength and body composition in childhood predict better cardiovascular health and a lower risk of cardiovascular disease in later life, and a healthier body composition in children predicts a lower risk of premature death. Research by Prof Joanne Chung, of the Department of Health and Physical Education (HPE), before she joined EdUHK found physical fitness among children in Hong Kong to be worse than their peers in Guangdong Province, mainland China, while other research at EdUHK probed the relative lack of PA in Hong Kong kindergartens and primary schools. For example, Dr Peggy Cheung’s research, conducted since 2012 showed that at primary school level PE lessons alone are not enough for children to reach the recommended minimums of moderate to vigorous physical activity a day. One reason is children spend too much PE and after school time being sedentary. Her work affirmed the need for more organised PA after regular school hours, and better pedagogy for ensuring genuine physical activity within the school day, including in PE classes themselves [R1].

Prof Joanne Chung built on Cheung’s work, as well as her own expertise on PA and its links to health, by focusing on the physical literacy of young children and their parents and developing pedagogy to increase PA across the kindergarten curriculum and beyond school. The “Jockey Club Keep-Fit Formula for Children” programme, sponsored by Jockey Club Charities Trust, was devised to address the urgent need to ensure children in Hong Kong can grow up fitter and healthier through improved health literacy and PA. Between 2015 and 2019 it was implemented across 97 kindergartens by The Physical Fitness Association of Hong Kong (PFAHK). Prof Chung was commissioned to conduct action research for the project.

This research has been the first of its kind to systematically evaluate the health and physical fitness literacy of young children, their parents and teachers in Hong Kong [R2]. From data gathered during the project Chung also developed a culturally relevant assessment tool for such evaluation, known as the United Norm [R3]. Health literacy is defined as the capacity of

individuals to obtain, process, and understand basic health information and services needed to make appropriate health decisions. The formula for fitness includes measurements of children's strength and cardiovascular health, as well as the built environment they live in (including access to space for PA), and amount of screen time they spend.

For the 3-year longitudinal and cross-sectional study, baseline measures involving 11,181 children in the project schools were conducted from Dec 2015 to May 2016 and follow-up data was gathered in 2017 and 2018 [R2]. The baseline study found less than 5% of kindergartens provided enough time for children to play and exercise based on international norms (60 minutes in half-day kindergarten or 120 minutes in whole-day).

Chung collaborated with PFAHK to address this alarming finding through an innovative cross-disciplinary physical fitness curriculum that integrates learning activities of physical fitness and health into other learning areas, such as language, mathematics, science and technology and arts. The longitudinal study examined whether the level of PA, fitness, and attitudes towards PA improved in pupils during the intervention period; whether the parental attitudes, support and behaviours related to PA in their child changed over time; and whether the school policy, environment, curriculum, and teachers' behaviours changed. The longitudinal study followed up on preschoolers who completed the baseline test in 2015/16, and their caregivers in the subsequent two years, with 433 children participating in 2016/17 and 316 in 2017/18 [R2]. A further 10,815 children participated in the cross-sectional study in 2016/17 and 6,309 in 2017/18. As action research, the programme in the 2016/17 school year was modified based on the HPE team's findings and recommendations at child, family and school levels. These included recommendations on the needs to 1.) cultivate the preschoolers' enjoyment of PA; 2.) educate parents on their child's PA, outdoor play, and screen time, and consequences and benefits of such behaviours; 3.) develop events/activities for preschoolers and their parents to increase PA at weekends; 4.) encourage parents to be physically active role-models and provide related support to children; and 5.) educate teachers to provide more adult-led physical activities in class time [R2].

### (3) References to the research

[R1] Cheung, P.Y. (2017). School-based physical activity opportunities in PE lessons and after-school hours: Are they associated with children's daily physical activity?. *European Physical Education Review*, DOI: 10.1177/1356336X17705274

[R2] Chung, J.W.Y., & Wong, T.K.S. (2019) Final report on Jockey Club Keep-Fit Formula for Children Programme [http://www.fit123.hk/Executive\\_Summary\\_Final.pdf](http://www.fit123.hk/Executive_Summary_Final.pdf)

**Sources of funding:** Research related to the Jockey Club Keep-Fit Formula for Children was funded by PFHK and Jockey Club Charities Trust (HK\$720,000)

[R3] Chung, J.W.Y., Wong, W.S., Wong, T.K.S., Wong, B.Y.M, Kwok, P.S.T., & Yan, V.C.M. (2019). The analysis of changes in the physical fitness of Hong Kong preschoolers following the adoption of an integrated physical fitness curriculum. *International Journal of Science and Healthcare Research*, 4(3), 185-193. |

### (4) Details of the impact

Through "The Keep-Fit Formula for Children" project, Chung's research has achieved impacts at school, parental and child levels on a.) *the pre-school curriculum in Hong Kong kindergartens*; b.) *on teaching and learning in kindergartens*; c.) *on the increased physical fitness and wellbeing of children*, evidenced by the physical tests conducted and feedback gathered during the cross-sectional and longitudinal evaluations in 2016/17 and 2017/18; d.) *on child and parental attitudes towards PA*. In addition large-scale community events and media coverage contributed to the

impact of e.) *increased public understanding and changed public perceptions* in the wider community about the importance of physical activity for young children.

Cheng's research had *direct impact on the curriculum and teaching and learning* in the 97 pilot kindergartens, through the development and release of 144 lesson plans for 4 cross-disciplinary topics across the 3 kindergarten grades, and professional development delivered to more than 2,000 in-service kindergarten teachers. Evaluation of the project indicated a significant increase in the variety of teaching materials that promote physical activity and a significant difference in number of outdoor activities in the curriculum over time. The percentage of kindergartens with at least 4 outdoor activities in the curriculum increased from 52% in 2015/16 to 54% in 2016/17 and 60% in 2017/18. There were also significant changes in teachers' behaviours during child's playtime across time. More teachers supervised, verbally encouraged and often joined in 2017/18 (37%) compared with 2015/16 (27%). **[See Section 4, R2]**

The implementation of the curriculum initiatives has had *direct impact on the physical fitness and well-being* of about 28,305 children involved in the project. Chung's evaluation found improved physical fitness of children at ages 3, 4, and 5, as assessed through their performance in activities including (1) sit and reach, (2) standing long jump, (3) throwing a tennis ball, (4) walking on balance beam, and (5) continuous jump with both feet. Performance of children in those year groups in 2016/17 and 2017/18 showed improved results over children of the same ages tested in 2015/16. Boys and girls aged 4, 5 and 6 exposed to the interventions demonstrated significant improvement in most physical fitness parameters in 2016/17 and 2017/18 as compared with those aged 4, 5 and 6 in 2015/16. The longitudinal study also included parents and principals in total 1,164; 999; and 648 parents and 73; 62; and 57 principals in 2015/16, 2016/17 and 2017/18 respectively.

Leung Hoi-sum, a teacher from St Philip Lutheran Church Kindergarten, shared the impact for teachers and children in her school, being quoted in an article in South China Morning Post (SCMP): "*Most of our children were afraid to be active and were refusing to join sports games. They lacked the confidence to face challenges ... Our teachers are learning new methods to make activities more fun. Our students' physical agility has increased a lot, their concentration on activities has obviously improved, and they're enjoying themselves more.*" **[See Section 5, C1]** Knowledge was further transferred by the training of 27 students in the Department of Early Childhood Education, EduHK, as well as groups of students at Hong Kong Polytechnic University and Lingnan University, who worked with the pilot schools to implement the new curricula activities while enhancing their own knowledge and capacity to promote PA across the curriculum. The project and research findings were disseminated to the wider pre-school sector in 5 seminars held between 2016 and 2019, reaching more than 900 pre-school principals and Department of Health officials, and extending the reach of the impact to thousands of children beyond the pilot schools by principals adopting the pedagogical innovation.

The project has had an *impact on informing public understanding and changing parental attitudes*. A physical fitness award scheme and territory-wide family sports days were organised by PFAHK to enhance school-home collaboration, in order to improve parents' confidence in and attitudes towards guiding their children in physical fitness development. In total, more than 13,000 children and parents participated in the Jockey Club Keep-Fit Formula family events held in 2016, 2017 and 2018 **[C5, C6]**. These included fun and rigorous testing on children's hand-eye coordination, balance and all-rounded physical fitness. Participants were assessed and given recommendations by professional coaches. There is evidence of impact on parental perceptions and children's engagement in PA from both the school and community events. Cheng's evaluation indicated that more parents perceived their child's PA important in 2017/18 (62%) compared with 2015/16 (54%). More children enjoyed PA in 2016/17 (81%) than in 2015/16 (67%) **[R2]**. One parent was quoted in the SCMP: "Although it is hard to find playgrounds both indoors and outdoors, I will try to take my child out for at least an hour a day" **[C2]**. Another parent shared with the media: "From the activities, I understand the importance of PA. I also exercised when having exercise with child, a win-win situation" **[C4]**. Meanwhile, a web-based interactive

community network established for the project is disseminating information and materials, receiving feedbacks and advocating communication among stakeholders. This attracted about 60,000 audience views between its launch in January 2016 and September 2018 [C5], extending the reach of the impact. Public understanding has also been extended through mass media coverage highlighting Chung's findings that less than 5% of kindergartens provide enough time for children to play and exercise [C2, C3, C4], coverage reaching audiences of several hundred thousand people.

While the project has resulted in significant improvements in practices, behaviours and attitudes among children, teachers and parents, Chung has recommended more family and teacher education to raise further awareness of the importance of their active role in preschoolers' PA. PFAHK has responded by promoting physical activities to more kindergartens, including distributing video resources.

Providing information for promoting PA and fitness and related literacy in early childhood through school, parental and community channels should have the long term impact of helping to address the public health concern of physical inactivity in the general population, by increasing PA in the next generation. To ensure the sustainability of the impact, the Physical Fitness Association of Hong Kong (PFAHK) launched the Keep-Fit Formula website that contained all the relevant information including research results, physical fitness activities and the integrated physical fitness curriculum [C5].

## (5) Sources to corroborate the impact

[C1] SCMP "How a Hong Kong family sports day keeps students on a healthy track" December 1, 2017

<https://www.scmp.com/lifestyle/health-beauty/article/2122472/how-hong-kong-family-sports-day-keeps-students-healthy-track>

[C2] "No child's play for Hong Kong kindergartens to fit in sufficient exercise time

<https://www.scmp.com/news/hong-kong/health-environment/article/2026149/no-childs-play-hong-kong-kindergartens-fit>

[C3] 【港童運動少肥仔多】 專家鼓勵齊 Keep Fit

<https://hk.news.yahoo.com/%E6%B8%AF%E7%AB%A5%E9%81%8B%E5%8B%95%E5%B0%91%E8%82%A5%E4%BB%94%E5%A4%9A-%E5%B0%88%E5%AE%B6%E9%BC%93%E5%8B%B5%E9%BD%8Akeep-fit-040041116.html>

[C4] 【全民運動日】 每天活動 180 分鐘幼童未達標 家長輕視體能活動

<https://www.hk01.com/%E8%A6%AA%E5%AD%90/208006/%E5%85%A8%E6%B0%91%E9%81%8B%E5%8B%95%E6%97%A5-%E6%AF%8F%E5%A4%A9%E6%B4%BB%E5%8B%95180%E5%88%86%E9%90%98%E5%B9%BC%E7%AB%A5%E6%9C%AA%E9%81%94%E6%A8%99-%E5%AE%B6%E9%95%B7%E8%BC%95%E8%A6%96%E9%AB%94%E8%83%BD%E6%B4%BB%E5%8B%95>

[C5] Jockey Club Keep-Fit Formula For Children web portal <http://www.fit123.hk/>

[C6] Territory Wide Family Sports Day, Jockey Club Keep-Fit Formula For Children <https://tickikids.com/hk/physical-fitness-association-of-hong-kong-china/territory-wide-family-sports-day-jockey-club-keep-fit-formula-for-children/>

[C7] 全港家庭運動日 2017

<https://www.weekendhk.com/tag/%E5%85%A8%E6%B8%AF%E5%AE%B6%E5%BA%AD%E9%81%8B%E5%8B%95%E6%97%A52017/>