

Fundamental movement skills project: Efforts to keep children in Indonesia active during the pandemic

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Abstract

This study aimed to determine and explain the efforts to keep children in Indonesia active during the COVID-19 pandemic. This research method used was a descriptive quantitative method. A total of 109 Early. The sample data used for this study were obtained via purposive sampling, where the data was under the criteria. The children participated in the challenge of doing physical activities at home during the pandemic. Regarding vulnerability, early childhood ages who took part in this challenge competition were 2–7 years old. In this study, the element of assessment was the fundamental movement skills of the children. The assessment instrument was a modified Peabody Developmental Motor Scale so that children could do it at home, and it included the items of balance, running, walking, hopping, jumping forward, crawling, throwing and catching objects with scores of 0–2. From the tests carried out, the reliability obtained using Cronbach's Alpha was 0.84. The results were excellent with consistent reliability. Furthermore, this study also assessed projects made by the family, namely by exercising with the family and using assessment points of family bonds, performance, and creativity carried out, such as using video packaging, uniform costumes and music. Efforts to keep children active during this pandemic have not been easy; this was observed from the number of participants who took part in the challenge although the dissemination of information was carried out for 1 month using mainstream mass media. This was also caused by the obstacles and difficulties that parents have experienced during this pandemic. For this reason, it is necessary to make even more strategic efforts at achieving the desired goals. The basic movement project with movement instructions from this modified Peabody development test can be applied to children during the pandemic because its implementation can be adapted to the conditions in the respective homes of children.

Key Words: Fundamental basic movement, home project, early childhood

Introduction

Fundamental movement skills are abilities that children must have (Barnett et al., 2016; Foulkes et al., 2017; Klingberg, Schranz, Barnett, Booth, & Ferrar, 2019). An increasing amount of evidence suggests that the development of motor skill competence is an important underlying mechanism that promotes engagement sustainability in physical activity. Fundamental movement generally consists of locomotor, non-locomotor and manipulative movement (Basman, 2019; Eddy et al., 2021; Platvoet et al., 2018). Basic locomotor movement is a moving movement that consists of walking, running, jumping, passing objects, rolling and crawling. Meanwhile, non-locomotor movement is movement of certain joints without moving places, such as balance, incision, and turning. Furthermore, manipulation is a movement carried out by controlling objects, such as kicking, dribbling, throwing, hitting and catching.

By having good basic movement skills, advanced movements found in sports can be mastered, such as the ability to run in athletics, the ability to throw in softball and rugby, and the ability to maintain balance in gymnastics. (Cools, de Martelaer, Vandaele, Samaey, & Andries, 2010). The success of athletes in the future depends on the experience of movement in childhood. With the mastery of various movements, the child will have the mobility to support him. For this reason, children need to be allowed to move so that in addition to maintaining their fitness, they also enrich their ability to move.

Currently, during the COVID-19 pandemic, the spaces for children to move are very limited (Araújo, 2021; Barwais, 2020; Nurulfa et al., 2021). Public places for children to move, such as schools, playgrounds, and even the yard, cannot be used. (Fröberg, 2021) This was done to reduce the spread of the COVID-19 virus. Intense interactions can cause the virus to become more widespread.

This makes children's opportunities to move increasingly limited, and as we know, children like to be physically active and move with their peers. Experts emphasize the importance of being an active lifestyle for

health and stress management, assuming proper precautions (Barwais, 2020; Guan et al., 2020; Matias & Dominski, 2020; Pavlovic et al., 2021). For this reason, creative action is needed so that children can stay active even in this pandemic situation. Such conditions have caused the government in Indonesia, in this case, the Ministry of Youth and Sports, to implement strategies to facilitate the movement of children by suggesting that children and families do physical activity through sports with their families at home. This was done by creating a sports challenge called SIOLGA (sports creation with family). The family (consisting of young children and parents or siblings) performs a series of movements upon given instructions in a video example, which contains basic movements and physical activities that can be done with the family at home. When parents and children collaborate in learning activities, bonding between parents and children increases as they are able to spend much more time together (Bhamani et al., 2020; Roeters & van Houdt, 2019; Shabas, 2016).

Given the importance of the role of parents in increasing children's abilities and interests in physical activities, children can be motivated to keep moving and to perform physical activities directed with the support of their parents. It is a challenge to involve parents in the physical, cultural, social, emotional, or psychological aspects of engagement (Badrasawi, Yahefu, & Khalid, 2020). Because family involvement through the continuum of early childhood education is recognized as the "best practice" in the field, this assessment process must not be excluded. However, teachers in early childhood programs may need additional strategies to invite families to join in the process (Cleaver & Walker, 2004; Domínguez-Amorós & Aparicio-Chueca, 2020; Nguyen, Smith, Granja, & Poverty, 2018).

Through this SIOLGA challenge, children can also be creative in making movement sequences that are in accordance with the stages of childhood development. In the limited space and equipment at home, parents and children can be creative in choosing and modifying tools that can be used but are still safe and comfortable. Ideally, equipment must match (be scaled to) the physical size and strength capabilities of children but also the balance and perceptual abilities. Equipment should never introduce negative constraints, such as fear, which would inhibit the development of movements for future play (Brewer, 2018)

Furthermore, we aimed to determine how this effort affects the basic movements of children and the forms of cooperation and creativity that were established by parents and children in this basic movement project. By measuring the basic movements of children who participated in this program and assessing the projects that children and parents make according to the assessment criteria, the bond between children and parents in the form of interaction and support provided, creativity in video packaging and performance in carrying out the movement project could be assessed.

Materials & Methods

Participants

The sample of data used for this study was purposive sampling, where the data followed the criteria. In this study, the sample data were from participants who took part in the SIOLGA challenge that had been declared valid by the committee, namely those who did movement projects in the form of videos following the provisions. Moreover, the conditions were basic movement videos contained in the video instructions, which were created under the tools and conditions for each participant with a total of 109 participants whose data was declared as valid. The participants were from Sumatra, Kalimantan, and Java to the easternmost region reaching the Province of Bali.

Procedure

After the challenge announcement, participants registered and sent the video link uploaded on social media. The period for collecting video links was from September 8 to October 10, 2020. Furthermore, the committee verified the data, and a team of judges assessed the video with criteria of basic movements, the interaction that was present and the interest of video packaging. They determined the winner based on the ten highest average scores. From the several fundamental movement videos collected, the researchers then assessed the basic movement with a modified Peabody instrument. Then, they measured the children's basic movements and displayed the results.

Measurements

Measurements in this study involved fundamental movement assessment data using a modified Peabody Developmental Motor Scale (Fay et al., 2019; Maddox, 2008). In this, the form of movement could be performed at the home of each child. The measured data were obtained from videos of the basic movement projects carried out by children and parents at home. In addition, this study also measured the ties between family and performance and creativity in creating the video packaging and music. The score range was:

56–70 : Fair

71–85 : Good

86–100 : Excellent

Statistical Analysis

Data processing was performed using SPSS.26 (IBM Corp., New York, NY, USA). Descriptive statistical parameters (mean, standard deviation) were calculated. The differences were significant when they exceeded 0.5 of the standard deviation and very large when they exceeded 1 for the standard deviation.

Results

We used 109 datasets from children who participated in the SIOLGA challenge. After previously sorting the data, only those who met the criteria were declared valid, namely those who sent the video according to the time determined by the organizer and those who sent it in accordance with the project video tutorial instructions. It contained instructions for basic movement along with physical activities that children and parents can do at home. The study included 42 children who were 2–3 years of age, 36 children who were 4–5 years of age, and 31 children who were 6–7 years of age. When participating in the SIOLGA movement challenges, of the children who did it with their family, 56% did it with their mother, 21% did it with their father, 10% did it with their uncle/aunt, and 11% did with sisters/brothers.

The following are the results of the child basic movement analysis:

Table 1. Fundamental basic movement results for 2–7-year-old children

	N	Min	Max	Mean	SD
Stationery					
Balance	109	,00	2,00	1,12	0,70
Locomotor					
Walk	109	1,00	2,00	1,56	0,49
Running	109	,00	2,00	1,22	0,59
Jumping	109	,00	2,00	1,34	0,58
Hoping	109	,00	2,00	1,21	0,57
Crawling	109	,00	2,00	1,50	0,53
Manipulating an Object					
Throwing	109	,00	2,00	1,38	0,62
Catching	109	,00	2,00	1,13	0,66
Valid N (listwise)	109				

Mean, Minimum, Maximum, SD=Standard Deviation

Table 2. Fundamental basic movement results for 3–4-year-old children

	N	Minimum	Maximum	Mean	Std. Deviation
Balance	42	,00	2,00	0,90	0,73
Walk	42	1,00	2,00	1,55	0,50
Running	42	,00	2,00	1,12	0,63
Jumping	42	,00	2,00	1,42	0,55
Hoping	42	,00	2,00	1,07	0,56
Crawling	42	,00	2,00	1,47	0,55
Throwing	42	,00	2,00	1,36	0,53
Catching	42	,00	2,00	1,24	0,58
Valid N (listwise)	42			8,89	

Mean, Minimum, Maximum, SD=Standard Deviation

Table 3. Fundamental basic movement results for 4–5-year-old children

	N	Minimum	Maximum	Mean	Std. Deviation
Balance	36	,00	2,00	1,14	0,64
Walk	36	1,00	2,00	1,55	0,50
Running	36	,00	2,00	1,20	0,62
Jumping	36	,00	2,00	1,25	0,70
Hoping	36	,00	2,00	1,36	0,64
Crawling	36	,00	2,00	1,41	0,55
Throwing	36	,00	2,00	1,167	0,74
Catching	36	,00	2,00	0,80	0,62
Valid N (listwise)	36			9,877	

Mean, Minimum, Maximum, SD=Standard Deviation

Table 4. Fundamental basic movement results for 6–7-year-old children

	N	Minimum	Maximum	Mean	Std. Deviation
Balance	31	,00	2,00	1,39	0,67
Walk	31	1,00	2,00	1,58	0,50
Running	31	1,00	2,00	1,39	0,50
Jumping	31	1,00	2,00	1,32	0,47
Hoping	31	,00	2,00	1,22	0,49
Crawling	31	1,00	2,00	1,64	0,48
Throwing	31	1,00	2,00	1,65	0,48
Catching	31	,00	2,00	1,35	0,71
Valid N (listwise)	31			10,19	

Mean, Minimum, Maximum, SD=Standard Deviation

From the video record that was collected, we analysed the movements performed by the children and parents. The basic movement abilities of the children were assessed. The aspects of parental involvement assessed included the bond between parents and children, appearance in video recordings, and creativity in displaying movement videos. The results are shown below.

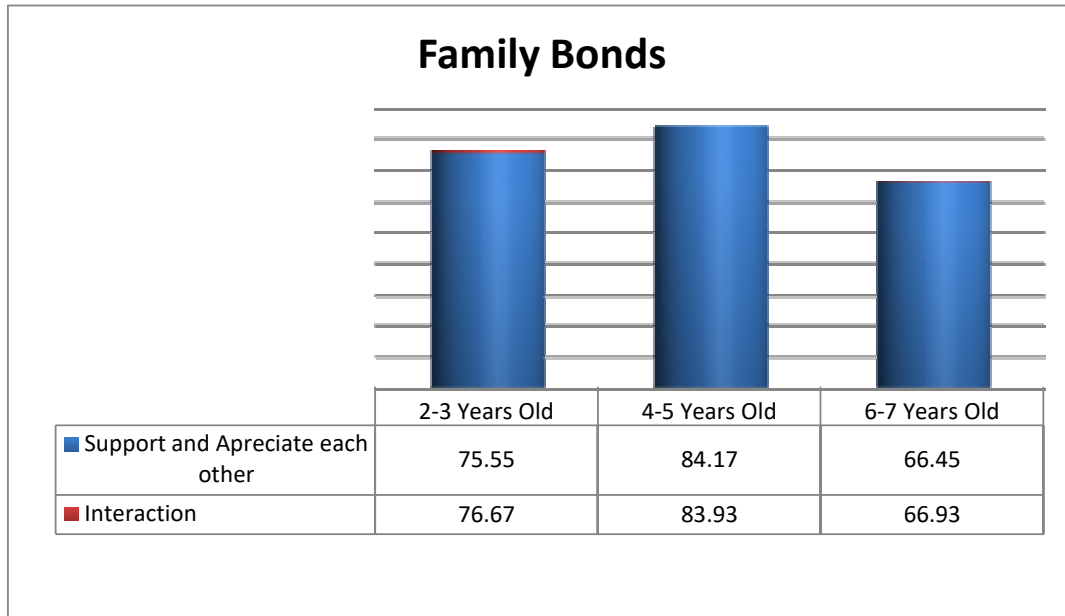


Fig. 1. Assessment of family bonds for 2–3-year-old children

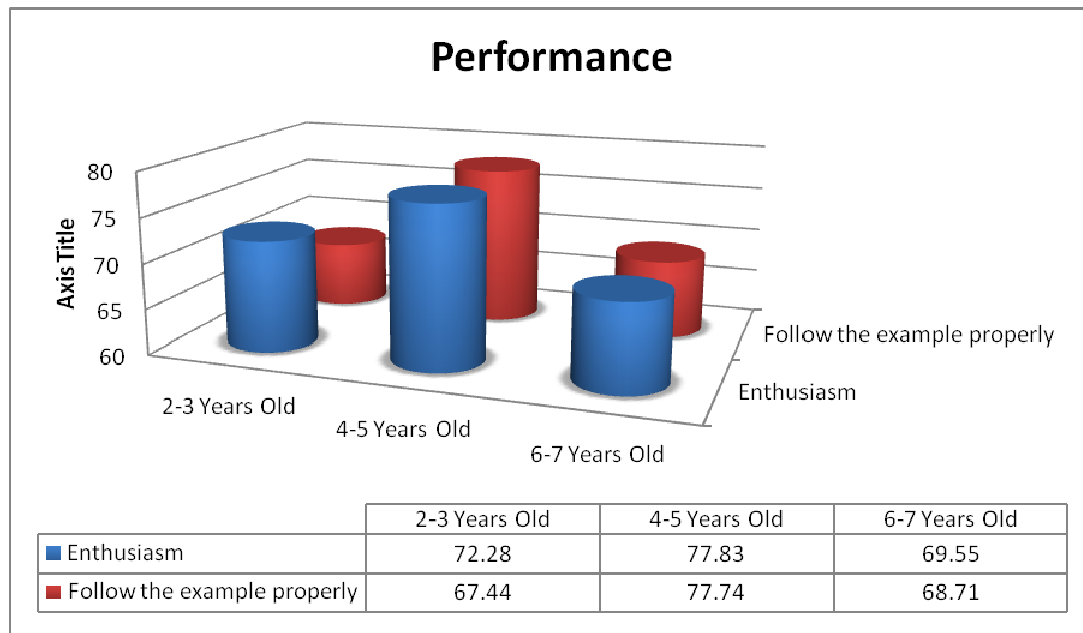


Fig. 2. Assessment of performance for 4–5-year-old children

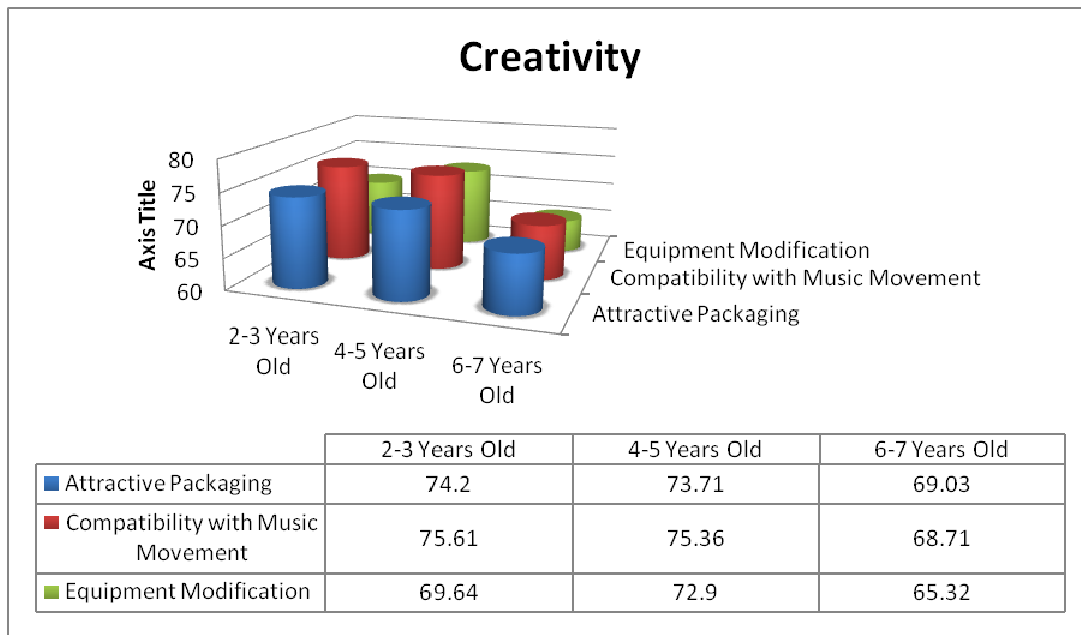


Fig. 3. Assessment of creativity for 6–7-year-old children

Discussion

In a pandemic situation in which children cannot physically move outside the home, it is necessary to have a project that can stimulate children to keep moving even though it must be done at home (Pavlovic et al., 2021), (Barwais, 2020). In this study, data was obtained upon implementing programs to keep children active during a pandemic.

Besides stimulating children through the SIOLGA program, we also obtained data about the children's basic motor skills. Through instructional videos for physical activity at home, fundamental movement skills data were obtained in video recordings made by the children and their families.

Measurement of basic movement using items and a modified range of scores from the Peabody development scale test included stationary (non-locomotor), locomotor, and manipulative movement. From the tests carried out, the reliability obtained using Cronbach's Alpha was 0.84, and these results were good and consistent in terms of reliability. For this reason, we conclude that the modified test adapted from the Peabody development scale can be used because we found a value of >0.60.

Of the total 109 children who took part in the SIOLGA challenge, 47.7% were boys, and 52.3% were girls. In addition to data on the children's basic movements, this study also obtained data on family relationships. The quality of time parents and children share with one another may be particularly important for the parent-child relationship and for children themselves (Roeters & van Houdt, 2019). Family engagement is a critical component of early care and education programs. This recognition stems from a body of research showing the critical role of family engagement in children's early learning and development (Nguyen et al., 2018) with indicators of mutually supporting and appreciating each other having an average value of 75.55 at ages of 2–3 years. This value was more significant for children who were 4–5 years (84.17) and, we found a sufficient bonding relationship for the 6–7-year-old children (66.45). Similar results were also found for the indicator of child and family interaction; for the 2–3-year-old children, it was 76.67. For the 4–5-year-old children, the value was 83.93, and for children 6–7 years of age, the average score was 66.93, which means sufficient.

The performance appraisal according to indicators of enthusiasm and suitability of movement with instructions showed that children who were 4-5 years old had a higher performance value, namely 77.83, in terms of indicators of enthusiasm, and indicators of following directions well resulted in a value of 77.74.

In addition, there was also an assessment of a movement recording video project in the form of assessment of creativity (Diamond & Waite, 2020; Ridzwan, Eshah, & Mokhsein, 2017). Being creative and making something at home can reduce stress during a pandemic (Center of the Study of Traumatic Stress, n.d.), (OECD, 2020). Creativity here includes packaging video shots attractively, adjusting movements to the accompanying music, and creativity in modifying simple equipment at home in an attractive manner. From the data above, we found that participants who were 4-5 years of age had a higher creativity score than other ages, i.e. they were able to package interesting videos with an average score of 73.99.

Conclusions

In this pandemic situation, children are one of the most affected because, with the closure of schools and playgrounds, children have difficulty expending their energy as well as parents. Parents do not have

guidelines to direct their children to stay active while at home. One of the efforts made by the Ministry of Youth and Sports to stimulate children to remain active has been carried out, even though this movement project has not been optimally successful because of the many possibilities and obstacles faced by parents and children during this pandemic.

Through this project, in an effort to keep children active while at home, data was obtained from 109 children who took part in the SIOLGA Movement Challenge (52 boys and 57 girls). The results of basic movement measurements using items and a modified range of scores from the Peabody development scale test included stationary (non-locomotor), locomotor, and manipulative movements. From the tests carried out, the reliability obtained using Cronbach's Alpha was 0.84, showing we had good and consistent reliability results. The average results of the basic movements obtained showed that children who were 6–7 years of age had a higher average score of 10.19 compared to children who were 4–5 years of age, which had a score of 9.87 and children who were 3–4 years of age who had a score of 8.89.

In addition, the established family bonds were observed to be higher for the children who were 4–5 years of age with an average value of 84.17 for the indicator of support and appreciation for each other and an interaction value of 83.93. For the performance criteria, the 4–5 years old had a higher value than other age categories with their enthusiasm indicator at 77.83 and their following instructions indicator was at 77.74. The involvement of parents in the development of basic movements and continuation of physical activity in children is essential. Activities can increase the creativity of children and maintain their motivation, especially during this pandemic.

There needs to be further action from the government to guide parents in guiding children to keep moving at home using existing equipment and space. To reach more participants, we must extend the information time and coverage via various social media outlets. We should also involve schools, kindergarten teachers and children's sports clubs.

References

- Araújo, C. G. S. de. (2021). Physical Activity, Exercise and Sports and Covid-19: What Really Matters. *International Journal of Cardiovascular Sciences*, 34(2), 113–115. <https://doi.org/10.36660/ijcs.20210003>
- Badrasawi, K., Yahefu, H., & Khalid, M. (2020). Challenges to Parental Involvement in Children's Education at a Primary School: A Rasch Analysis. *IJUM Journal of Educational Studies*, 7(1), 47–57. <https://doi.org/10.31436/ijes.v7i1.243>
- Barnett, L. M., Stodden, D., Cohen, K. E., Smith, J. J., Lubans, D. R., Lenoir, M., ... Morgan, P. J. (2016). Fundamental movement skills: An important focus. *Journal of Teaching in Physical Education*, 35(3), 219–225. <https://doi.org/10.1123/jtpe.2014-0209>
- Barwais, F. A. (2020). Physical Activity at Home During the COVID-19 Pandemic in the Two Most-affected Cities in Saudi Arabia. *The Open Public Health Journal*, 13(1), 470–476. <https://doi.org/10.2174/1874944502013010470>
- Basman, A. J. (2019). Assessment criteria of fundamental movement skills for various age groups: A systematic review. *Journal of Physical Education and Sport*, 19(1), 722–732. <https://doi.org/10.7752/jpes.2019.01104>
- Bhamani, S., Makhdoom, A. Z., Bharuchi, V., Ali, N., Kaleem, S., & Ahmed, D. (2020). Home Learning in Times of COVID: Experiences of Parents. *Journal of Education and Educational Development*, 7(1), 9. <https://doi.org/10.22555/joeed.v7i1.3260>
- Brewer, H. (2018). Physical Activity and Health Promotion in the Early Years: Effective Strategies for Early Childhood Educators. In *Educating the Young Child Advances in Theory and Research, Implications for Practice*. <https://doi.org/10.1007/978-3-319-76006-3>
- Center of the Study of Traumatic Stress. (n.d.). *Helping Homebound Children during the COVID-19 Outbreak*. Retrieved from www.redcross.org
- Cleaver, H., & Walker, S. (2004). Involving Families in the Assessment Process. *Assessing Children's Needs and Circumstances: The Impact of the Assessment Framework*, 59–96.
- Cools, W., de Martelaer, K., Vandaele, B., Samaey, C., & Andries, C. (2010). Assessment of movement skill performance in preschool children: Convergent validity between MOT 4-6 and M-ABC. *Journal of Sports Science and Medicine*, 9(4), 597–604.
- Diamond, R., & Waite, F. (2020). Physical activity in a pandemic: A new treatment target for psychological therapy. *Psychology and Psychotherapy: Theory, Research and Practice*, 1–8. <https://doi.org/10.1111/papt.12294>
- Domínguez-Amorós, M., & Aparicio-Chueca, P. (2020). Lack of association between the reasons for and time spent doing physical activity. *International Journal of Environmental Research and Public Health*, 17(18), 1–14. <https://doi.org/10.3390/ijerph17186777>
- Eddy, L. H., Preston, N., Mon-Williams, M., Bingham, D. D., Atkinson, J. M. C., Ellingham-Khan, M., ... Hill, L. J. B. (2021). Developing and validating a school-based screening tool of Fundamental Movement Skills (FUNMOVES) using Rasch analysis. *PLoS ONE*, 16(4 April), 1–14. <https://doi.org/10.1371/journal.pone.0250002>
- Fay, D., Wilkinson, T., Anderson, A. D., Hanyzewski, M., Hellwig, K., Meador, C., ... Wong, J. (2019). Effects

- of Modified Instructions on Peabody Developmental Motor Scales, Second Edition, Gross Motor Scores in Children with Typical Development. *Physical and Occupational Therapy in Pediatrics*, 39(4), 433–445. <https://doi.org/10.1080/01942638.2018.1534921>
- Foulkes, J. D., Knowles, Z., Fairclough, S. J., Stratton, G., O'Dwyer, M., Ridgers, N. D., & Fowweather, L. (2017). Effect of a 6-Week Active Play Intervention on Fundamental Movement Skill Competence of Preschool Children: A Cluster Randomized Controlled Trial. *Perceptual and Motor Skills*, 124(2), 393–412. <https://doi.org/10.1177/0031512516685200>
- Fröberg, A. (2021). How children and young people can stay physically active during the novel coronavirus pandemic while take into account safety measures and precautions. *Health Promotion Perspectives*, 10(4), 295–299. <https://doi.org/10.34172/hpp.2020.47>
- Guan, H., Okely, A. D., Aguilar-Farias, N., del Pozo Cruz, B., Draper, C. E., El Hamdouchi, A., ... Veldman, S. L. C. (2020). Promoting healthy movement behaviours among children during the COVID-19 pandemic. *The Lancet Child and Adolescent Health*, 4(6), 416–418. [https://doi.org/10.1016/S2352-4642\(20\)30131-0](https://doi.org/10.1016/S2352-4642(20)30131-0)
- Klingberg, B., Schranz, N., Barnett, L. M., Booth, V., & Ferrar, K. (2019). The feasibility of fundamental movement skill assessments for pre-school aged children. *Journal of Sports Sciences*, 37(4), 378–386. <https://doi.org/10.1080/02640414.2018.1504603>
- Maddox, T. (2008). Peabody Developmental Motor Scales. *Encyclopedia of Special Education*, 1–7. <https://doi.org/10.1002/9780470373699.spedec1552>
- Matias, T. S., & Dominski, F. H. (2020). The COVID-19 pandemic challenges physical activity with two emerging paradigms. *Revista Brasileira de Atividade Física & Saúde*, 25, 1–6. <https://doi.org/10.12820/rbafs.25e0113>
- Nguyen, U. S., Smith, S., Granja, M. R., & Poverty, N. C. for C. in. (2018). Helping Early Care and Education Programs Assess Family Engagement Practices and Plan Improvements: Results of the Georgia Family Engagement Planning Tool Pilot. *National Center for Children in Poverty*. Retrieved from http://proxy.mul.missouri.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&AuthType=ip_cookie.url,uid&db=eric&AN=ED594380&site=ehost-live&scope=site
- Nurulfa, R., Motto, C. A., Dlis, F., Tangkudung, J., Lubis, J., & Junaidi, J. (2021). Physical Education Survey during the COVID-19 Pandemic in Eastern Indonesia. *International Journal of Human Movement and Sports Sciences*, 9(4), 668–675. <https://doi.org/10.13189/saj.2021.090410>
- OECD. (2020). Combatting COVID- 19 ' s effect on children. *Tackling Coronavirus (COVID-19): Contributing to a Global Effort*, (May), 1–41.
- Pavlovic, A., DeFina, L. F., Natale, B. L., Thiele, S. E., Walker, T. J., Craig, D. W., ... Kohl, H. W. (2021). Keeping children healthy during and after COVID-19 pandemic: meeting youth physical activity needs. *BMC Public Health*, 21(1), 1–8. <https://doi.org/10.1186/s12889-021-10545-x>
- Platvoet, S., Faber, I. R., de Niet, M., Kannekens, R., Pion, J., Elferink-Gemser, M. T., & Visscher, C. (2018). Development of a Tool to Assess Fundamental Movement Skills in Applied Settings. *Frontiers in Education*, 3(September). <https://doi.org/10.3389/educ.2018.00075>
- Ridwan, S. B., Eshah, S., & Mokhsein, B. (2017). Creativity in Preschool Assessment. *International Journal of Academic Research in Business and Social Sciences*, 7(2), 543. <https://doi.org/10.6007/IJARBS/v7-i2/2663>
- Roeters, A., & van Houdt, K. (2019). Parent–Child Activities, Paid Work Interference, and Child Mental Health. *Family Relations*, 68(2), 232–245. <https://doi.org/10.1111/fare.12355>
- Shabas, S. (2016). Relationships between Parents and Preschool-Age Children Attending Kindergartens. *Procedia - Social and Behavioral Sciences*, 233(May), 269–273. <https://doi.org/10.1016/j.sbspro.2016.10.124>