EFFECTS OF PARENT-CHILD PHYSICAL ACTIVITY INTERVENTION ON GROSS MOTOR SKILLS AMONG PRESCHOOLERS IN SHANXI PROVINCE, CHINA

By

JIA ZHAO

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Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

January 2024

FPP 2024 11

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia, in fulfilment of the requirement for the degree of Doctor of Philosophy

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By

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January 2024

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Gross motor development is fundamental for young children to developing the advanced movement and specific skills. Parents are children's first teachers who can support their physical and mental growth development. However, physical activity levels in young children are low in China, the efficient and effective parent-child physical activity interventions to increase physical activity in young children are unclear. The purpose of this quantitative study was to investigate the effect of parent-child physical activity intervention on children's gross motor skills. A total of 66 children aged five to six and their parents from Changzhi city in China were divided into two group to participate in the experimental parent-child physical activity intervention program in this study. Two instruments including *Children's Family Physical Education Environment Questionnaire* and the *Test of Gross Motor Development-2* were used in the pre-test and post-test of experiments. The findings show that parent-child physical activity intervention program, had a significant effect on children's gross motor skills. After parent-child physical activities intervention,

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parents' attitude towards children's physical education had relationship with children's gross motor skills intervention. While the relationship between sports materials at home before and after in treatment group were not found. The findings indicated that it is necessary for parents to provide opportunities for their children to engage in physical activity that promote a diversity of motor skills. Parents need to improve their attitudes of physical education, provide enrich sports materials and company their child to engage in physical activity in home environment to help their child to improve gross motor skills in their daily life.

Keywords: Parent-child physical activity; Gross motor skill; Yong children; Physical activity

SDG: GOAL 3: Good Health and Well being

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Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

KESAN INTERVENSI AKTIVITI FIZIKAL IBU BAPA-KANAK-KANAK KEMAHIRAN MOTOR KASAR DALAM KALANGAN PRASEKOLAH DI SHANXI PROVINSI, CHINA

Oleh

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Perkembangan motor kasar adalah asas bagi kanak-kanak kecil untuk membangunkan pergerakan lanjutan dan kemahiran khusus. Ibu bapa adalah guru pertama anak-anak yang boleh menyokong perkembangan pertumbuhan fizikal dan mental mereka. Walau bagaimanapun, tahap aktiviti fizikal dalam kanak-kanak kecil adalah rendah di China, intervensi aktiviti fizikal ibu bapa-anak yang cekap dan berkesan untuk meningkatkan aktiviti fizikal pada kanak-kanak kecil adalah tidak jelas. Tujuan kajian kuantitatif ini adalah untuk menyiasat kesan intervensi aktiviti fizikal ibu bapa dan anak terhadap kemahiran motor kasar kanak-kanak. Seramai 66 kanak-kanak berumur lima hingga enam tahun dan ibu bapa mereka dari bandar Changzhi di China dibahagikan kepada dua kumpulan untuk mengambil bahagian dalam program intervensi aktiviti fizikal ibu bapa-anak eksperimen dalam kajian ini. Dua instrumen termasuk Soal Selidik Persekitaran Pendidikan Jasmani Keluarga Kanak-kanak dan Ujian Perkembangan Motor Kasar-2 telah digunakan dalam ujian pra dan ujian pasca eksperimen. Dapatan kajian menunjukkan bahawa program intervensi aktiviti fizikal

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ibu bapa dan anak, mempunyai kesan yang signifikan terhadap kemahiran motor kasar kanak-kanak. Selepas intervensi aktiviti fizikal ibu bapa dan anak, sikap ibu bapa terhadap pendidikan jasmani kanak-kanak mempunyai hubungan dengan intervensi kemahiran motor kasar kanak-kanak. Manakala hubungan antara bahan sukan di rumah sebelum dan selepas dalam kumpulan rawatan tidak ditemui. Dapatan kajian menunjukkan bahawa ibu bapa perlu memberi peluang kepada anak-anak mereka untuk melibatkan diri dalam aktiviti fizikal yang menggalakkan kepelbagaian kemahiran motor. Ibu bapa perlu mempertingkatkan sikap pendidikan jasmani mereka, menyediakan bahan-bahan sukan yang memperkaya dan mendampingi anak mereka untuk melibatkan diri dalam aktiviti fizikal di persekitaran rumah untuk membantu anak mereka meningkatkan kemahiran motor kasar dalam kehidupan seharian mereka.

Kata Kunci: Aktiviti fizikal ibu bapa-anak; Kemahiran motor kasar; Anak-anak Yong; Aktiviti fizikal

SDG: Matlamat 3: Kesihatan dan Kesejahteraan yang Baik

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ACKNOWLEDGEMENTS

This thesis would not have been possible finished without the tremendous support and sincere love of my supervisors and family. I am profoundly grateful to those people who helped me along my PhD journey.

Firstly, I would like to sincerely thank my supervisor, Dr. Borhannudin Abdullah. His instructions and suggestions have broadened my insights into physical education of early childhood. Secondly, I would like to express my gratitude to Dr. Roxana Dev Omar Dev and Dr. Shamsulariffin Samsudin, who are knowledgeable and has been patient in providing guidance to me throughout this research. They gave me generous and invaluable suggestions for my study. Anyway, I cannot express strongly enough the virtues and support to my three supervisors. Moreover, I am thankful to teachers from the Faculty of Education, Universiti Putra Malaysia who helped me directly and indirectly.

Finally, I would like to express my gratitude for my family who supported me and stood by me throughout the study. Without their love and support, I would not have been able to finish this study. My special thanks go to my wife, who has provided me great assistance and loyal spiritual support. It is my good fortune to have my parents and parents-in-law who always believed and generously encouraged me. I was so lucy that my baby came out during my PhD journey. He gave me infinite believe and strength to overcome all kinds of difficulties.

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TABLE OF CONTENTS

		Page
ABSTRACT		i
ABSTRAK		iii
ACKNOWLEDGEMENTS		v
APPROVAL		vi
DECLARATION		viii
LIST OF TABLES		xiii
LIST OF FIGURES		xvi
LIST OF APPENDICES		xvii
CHAPTER		
1	**INTRODUCTION**	1
	1.1 Introduction	1
	1.2 Background of the Study	2
	1.3 Statement of the Problem	8
	1.4 Research Questions	13
	1.5 Objectives of the Study	13
	1.6 The Research Hypotheses	14
	1.7 Significance of the Study	17
	1.8 Scope of this Study	19
	1.9 Definition of Key Terms	19
	1.10 Summary of Chapter	21
2	**LITERATURE REVIEW**	23
	2.1 Introduction	23
	2.2 Background of Early Childhood Physical Education	24
	2.2.1 Physical Education of Young Children in the World	24
	2.2.2 Physical Education of Early Children in China	34
	2.2.3 Problems of Physical Education for Early Children	38
	2.3 Theories Underpinning the Theoretical Framework	41
	2.3.1 Bronfenbrenner Ecological Systems Theory	41
	2.3.2 Constructivism Theory	46
	2.3.3 Dynamic System Theory	49
	2.4 Theoretical Framework of This Study	52
	2.5 Early Children's Gross Motor Skills	55
	2.5.1 Conception of Gross Movement and Gross Motor Skill	55
	2.5.2 Child's Locomotor Skill and Object Control Skill	59
	2.5.3 Influence Factors of Gross Motor Skills	62
	2.6 Home Environment and Children's Gross Motor Skills	68
	2.7 Parent-child Physical Activity for Children	78
	2.8 Parent-child Physical Activity and Children's Gross	

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Motor Skills 82
2.9 Conceptual Framework of This Study 90
2.10 Summary of Chapter 92

3 METHODOLOGY 95
3.1 Introduction 95
3.2 Research Design 96
3.3 Setting 99
3.4 Population and Sampling Method 100
3.4.1 Population 100
3.4.2 Sampling Method 101
3.5 Research Instruments 104
3.5.1 Questionnaire 104
3.5.2 Test of Gross Motor Development (TGMD) 106
3.6 Validity 108
3.6.1 Content Validity 109
3.6.2 Construct Validity 112
3.7 Reliability 117
3.8 Intervention Protocol 121
3.8.1 Designing of Intervention Program 121
3.8.2 Implementation of Intervention 127
3.9 Study Procedures 130
3.10 Data Collection 131
3.11 Data Analysis 132
3.12 Ethical Considerations 135
3.13 Summary of Chapter 137

4 RESULTS OF FINDINGS 138
4.1 Introduction 138
4.2 Response Rate 139
4.3 Normality Test 140
4.4 Respondents' Demographic Profile 142
4.5 Respondents' Information in Treatment and Control Groups 145
4.6 Children' Gross Motor Skills before the Intervention 146
4.7 Outcomes of Children's Gross Motor Skills after Intervention 149
4.8 Outcomes for Parents before and after the Intervention 158
4.9 Effect of Parent-child Physical Activities on Children's TGMD 166
4.10 Summary of Chapter 169

5 SUMMARY, DISCUSSIONS, LIMITATIONS, IMPLICATIONS, RECOMMENDATIONS AND CONCLUSION 171
5.1 Introduction 171
5.2 Summary of the Study 171
5.3 Discussions 172
5.3.1 Children's Gross Motor Skills 172
5.3.2 Relationship between Home Environment on

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Children's Gross Motor Skills 174
5.3.3 Effect of Parent-child Physical Activity on Children's Gross Motor Skills 176
5.4 Limitations of this Study 178
5.5 Theoretical Implications 178
5.6 Practical Implications 181
5.7 Recommendations for Further Study 182
5.8 Conclusion 183

REFERENCES 184
APPENDICES 204
BIODATA OF STUDENT 244
LIST OF PUBLICATIONS 245

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LIST OF TABLES

Table		Page
2.1	Implementation of Physical Education: Global/region (%)	28
2.2	Quality of Facilities: Global/region (%)	29
2.3	Popular One-Dimensional Models for Classifying Movement	57
2.4	Description of Each Subitem of Locomotor and Object Control	60
2.5	Literature Review of Parent-child Physical Activity and Children's Gross Motor Skills	89
3.1	The Appraisal Sheet of Intervention Content	110
3.2	The Appraisal Sheet of Questionnaire	111
3.3	KMO and Bartlett's Test of Construct 1	114
3.4	Exploratory Factor Analysis of Construct 1	114
3.5	KMO and Bartlett's Test of Construct 2	115
3.6	Exploratory Factor Analysis of Construct 2	116
3.7	KMO and Bartlett's Test of Construct 3	116
3.8	Exploratory Factor Analysis of Construct 3	117
3.9	Summary of TGMD-2 Reliability Related to Three Sources of Error (Decimals Omitted)	118
3.10	Reliability Statistics of Each Item	119
3.11	Summary of Questionnaire Reliability	120
3.12	An example of Content of Intervention Program in the First Month	126
3.13	An example of Content of Intervention Program in the Second Month	127
3.14	Sample of Attendance Sheet of Participants	129
3.15	Methods of Data Analysis based on Research Questions	135
4.1	Response Rate of Participants in Two Months Intervention Period	139
4.2	Normality Test for the Data of Pretest and Post-test	141

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4.3	Children's Demographic Profile	142
4.4	Children's Weight and Height	143
4.5	Distribution of Parents	143
4.6	Distribution of Parents by Education Level	144
4.7	Distribution of Respondents by Family Income	144
4.8	Group Statistics of Treatment and Control among Children's Demographic Information	145
4.9	Group Statistics of Treatment and Control among Parents' Demographic Information	146
4.10	Baseline Children's Locomotor Skills Between Treatment and Control Groups	147
4.11	Baseline Children's Object Control Skills Between Treatment and Control Groups	148
4.12	Baseline Children's Gross Motor Skills Between Treatment and Control Groups	149
4.13	Analysis of MANOVA towards GMQ of Children before and after Parent-child physical Activity Intervention in Treatment Group and Control Group	150
4.14	Independent-samples T-test of Locomotor Skills between Two Groups after Intervention	151
4.15	Independent-samples T-test of Object Control Skills between Two Groups after Intervention	152
4.16	T-test of GMQ between Two Groups after Intervention	153
4.17	Paired Samples Statistics of Locomotor for Treatment Group	155
4.18	Paired Samples Test of Locomotor for Treatment Group	156
4.19	Paired Samples Statistics of Object Control for Treatment Group	157
4.20	Paired Samples Test of Object Control for Treatment Group	157
4.21	Analysis of MANCOVA towards GMQ between PB and PD before and after Intervention	159
4.22	Paired Samples Statistics of Parents in Control Group	160
4.23	Paired Samples Test of Parents in Control Group	160

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4.24	Paired Samples Statistics of Parents in Treatment Group	161
4.25	Paired Samples Test of Parents in Treatment Group	161
4.26	The Strength of the Correlation Coefficient Values	163
4.27	The Relationship Between Influencing Factors and Children's Gross Motor Skills for Control and Experiment Groups Before Parent-child Physical Activity Intervention	163
4.28	The Relationship Between Influencing Factors and Children's Gross Motor Skills for Control and Experiment Groups After Parent-child Physical Activity Intervention	165
4.29	Multiple Regression of Analysis of Variables in Treatment Group after Intervention	167
4.30	Hypotheses Summary of Study	168

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LIST OF FIGURES

Figure		Page
2.1	National Standards for K-12 Physical Education in America	31
2.2	The existence of national strategies and large-scale initiatives to promote physical education and physical activity in primary and lower secondary education, 2011	33
2.3	Bronfenbrenner's Ecological System	43
2.4	Newell's Model of Dynamic System Theory	50
2.5	A Transactional View of Causation in Motor Development	52
2.6	Theoretical Framework of This Study	53
2.7	Conceptual Framework of This Study	92
3.1	Research Design of this Study	98
3.2	Location of Changzhi City Jurisdiction in Shanxi Province	99
3.3	A Part of Questionnaire	106
3.4	The Flow Chart of Study Procedures	131
4.1	Diagram of Paired Samples Test of TGMD for Treatment Group	154

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LIST OF APPENDICES

Appendix		Page
A	Permission to Use the Questionnaire	204
B	Children's Family PE Environment Questionnaire (Chinese)	205
C	Children's Family PE Environment Questionnaire (English)	208
D	Appointment Letter for Experts (Chinses)	211
E	Appointment Letter for Experts (English)	212
F	TGMD Scale	213
G	Expert Evaluation Form	214
H	Intervention Program (Chinese)	215
I	Informed Consent Form for Participating in Social Science Survey	241
J	Research Ethics Approval Letter from Universiti Putra Malaysia	242
K	Permission Letter from Preschool	243

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Motor skill competence is essential to children being physically keep them active. Gross motor development is important to the advanced movement and specific skills (Borhannudin, et al., 2013). Fundamental motor skills like balancing, jumping, and throwing are important for children because these can reduce chances of developing physical activity and the burden of childhood obesity. Moreover, gross motor competence serves to enhance the development of long-term health outcomes among children and adolescents (Robinson et al., 2015; Cattuzzo, et al., 2014; Engel, et al., 2018).

Young children have the developmental prospective to master most fundamental motor skills by 6 years of age during physical education, physical activity, and sport (O'Brien, Belton, & Issartel, 2016; Valentini, 2016). Although the importance of fundamental motor skills for children's health and development, however, Engel, et al. (2018) have found that there are inadequate studies to measure children's fundamental motor skills and physical activity (Engel, et al., 2018); as well as factors which predict gross motor competence among children (Barnett, Hnatiuk, Salmon, & Hesketh, 2019).Alternatively, more previous research on teachers' contribution in physical education to early gross motor development (Robinson, Webster, Logan, 2012; Brian, Goodway, Logan, & Sutherland, 2017; Muchlisin, 2020). However, little has been identified about how parents support children's gross motor development at home.

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Parent-child physical activity plays an important role in the physical and mental development among children. It cannot only improve the emotional communication between parents and children, but also allow parents and children to begin an close relationship in activities (Engel, et al., 2018; Ma, 2022; Lyu, 2022; Fan & Xiao, 2023). Through parent-child physical activities, children can continue to try to challenge goals, so that children can be improved in terms of physical, psychological and social adaptability (Ma, 2022; Lyu, 2022). Furthermore, physical activities can stimulate children's inner potential, and lay the foundation for children's all-round development (Wang, et al., 2011; Huang, 2018; Xu, 2021; Lyu, 2022).

1.2 Background of the Study

Global intensities of children overweight and obesity have increased dramatically in recent decades (De Onis, Blössner, & Borghi, 2010; Hesketh, Lakshman, & van Sluijs, 2017; Martin et al., 2018; WHO, 2020; Martin et al., 2018). In 2019, according to the report of World Health Organization (WHO), an estimated 38.2 million children under the age of 5 years were overweight or overweight (WHO, 2020). According to the investigation of De Onis, Blössner and Borghi (2010) from 140 countries, 43 million children (35 million in developing countries) were estimated to be overweight and 92 million were at risk of overweight. In China, the Report on Childhood Obesity in China (2017) has pointed out that the rate of childhood obesity is rising (Draper, et al., 2017). In 2017, the obesity rate of children aged 0 to 7 in main cities is about 4.3%, and the rate of obesity for school-age children over 7 years old is about 7.3%. It has been estimated that there are 4.76 million obese children between 0 and 7 years old, and 34.96 million overweight and obese school-age children. If effective intervention measures are not taken, this data may continue to rise considerably higher rates. The

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results confirm the need for effective interventions starting early childhood to reverse anticipated trends (Draper, et al., 2017).

Regarding the rate of childhood overweight and obesity which are rising rapidly in China and becoming an important public health problem are threatening children's health and development (Zhu & Ma, 2022). Wang, et al., (2020) have investigated the relationship between obesity and hypertension in preschool children ageing 3-6 years. The results have shown that the prevalence of hypertension in 1484 preschool children has been 11.93% (boys 12.58%, girls 11.18%). The overweight rate of preschool children has been 12.14% (14.84% for boys and 9.05% for girls), and the obesity rate remained 6.14% (8.69% for boys and 3.22% for girls). The overweight and obesity rates of boys have been fond significantly higher than those of girls ($P<0.05$). The situation of childhood overweight and obesity is serious concern in China.

Developing children's motor skills can reduce probabilities of the burden of childhood obesity and developing insalubrious physical activity (Aadland, et al., 2017; Sun & Fan, 2019). Moreover, gross motor skills can help in enhancing the development of long-term health results in children and adolescents (Robinson et al., 2015; Cattuzzo, et al., 2014; Engel, et al., 2018). Gross motor skills development includes movements of large muscles of the arms, leg and torso, which are the use of individual functions, in conjunction with large muscle exercise to improve the individual's motor function and promote physical and mental development. Children's gross motor skills, which involve the coordination of the muscles, and the neurological system, are under the control of brain nerves and muscles (Miquelote, et al., 2012; Muchlisin, 2020).

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Research shows that gross motor skills can benefit young children from various parts. It has positive effects on children's academic achievement in preschool (Westendorp, 2011; Lopes, Santos, & Pereira, 2013; Magistro, Bardaglio, & Rabaglietti, 2015). Gross motor training can promote children's cerebral development and improve the function of physical for an individual (Colella, & Morano, 2011). Moreover, gross motor skills affect balance and coordination of children's physical. These can also form the basis for fine motor skills that help children in doing small movements in their daily life. Children can depend on gross motor competence for everyday activities and doing successful academic experiences at preschool, at home and in the community (Wang, Hu, Chen, &Yang, 2018; Magistro, Bardaglio, & Rabaglietti, 2015).

According to Zhu and Ma (2022), the obese environment is a adjustable factor in the prevention and control of childhood obesity, including the food environment and the physical activity. As children's main activity places, the food and exercise facilities, educational and counseling services, behavioral models, food and exercise-related economic factors provided by families and schools can become important among children's food choices and physical activity levels which can be associated with childhood obesity risk. Therefore, physical activity in environment can be considered to be important for young children.

In 2020, six departments including the National Health Commission and the Ministry of Education have released the "Implementation Plan for the Prevention and Control of Obesity in Children and Adolescents" in China. The plan implements defined policies to prevent and control obesity of children. The National Health and Health

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Commission frequently monitors the nutrition and health status of children, allowing parents and teachers to grasp the changes in overweight and obesity in children and adolescents in real time. Since 2015, the "Nutrition Campus" project focusing on the prevention and control of overweight and obesity has been carried out in pilot areas across the country. After 6 years of exploration, this project has explored many models that can be used for reference and generalizable experiences and technology. The nutrition improvement project for rural compulsory education students has been implemented by the state. In addition to focusing on indicators such as height, low weight, and anemia control, also focuses on the prevention of overweight (Zhu & Ma, 2022; Liu & Liu, 2022). Although the government implements precise policies to prevent and control obesity of children, yet it is necessary to encourage young children to take part in physical activity.

In 2016, the "Healthy China 2030" Planning Outline has issued by the Central Committee of the Communist Party of China and the State Council has pointed out about the implementing the healthy children program and strengthening early childhood development. The plan points out that it is necessary to strengthen personal health responsibility, improve national health literacy, and guide the formation of a healthy lifestyle. Being an important part of society, family has its powerful educational function, especially in influencing the sports behavior of preschool children. The preschool stage is a serious period for children to develop exercise habits and sports interesting. It is also the primary learning stage for various knowledge and skills. The general thinking consciousness has not been fully made, and their own development is more easily affected by external factors such the environment of preschool and community (Fan, 2019).

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To guide kindergartens and families to implement scientific early childhood care and education, the Ministry of Education in China officially has promulgated the Guidelines for the Study and Development of Children of 3-6 Years Old in 2012. The aim is to promote the comprehensive and harmonious development of children's physical and mental health (Guidelines for the Study and Development of Children of 3-6 Years Old, 2012). Young children's physical fitness including height, body mass index, cardiopulmonary, strength, endurance, and explosive fitness is significantly connected with sports participation and motor development disorders. The continuous outcome of gross motor development disorder can affect physical activity from young children to adolescents, and poor gross motor skills are related to physical problem such as overweight and obesity in early childhood, as well as increased sedentary behavior (Morano, Colella, & Caroli, 2011; Wrotniak, Epstein, Dorn, Jones, & Kondilis, 2006).

Children's home environment has a profound effect on their overall development such as language, social behavior, physical development, adaptive and cognitive development (Commerford, 2015; Bergen, et al., 2017). In the 1970s, Bronfenbrenner has particularized the ecological systems theory, and he noted that the "family is the most effective and economical system for eliciting and sustaining the development of the child" (Bronfenbrenner, 1974). Home environment influence on children's learning and cognitive abilities (Niklas, Cohrssen, & Tayler, 2016; Zhang, Su-Zhen, Tomohiro, Hua, & Georgiou, 2020; Hutton, et al., 2019) as well as physical development (Hsieh, et al., 2011; Miquelote, et al., 2012). Three (3) to six (6) years old is a crucial period for individual growth and development of gross movements. In the field of child growth, environmental impact is the key factor for optimal growth

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and development, therefore, especially the family environment is the main one.

Many factors of home environment influence children's gross motor development such as socioeconomic position of family (Freitas, et al.,2013； Morley, et al., 2015; Ferreira, et al., 2018), parental attitude on early childhood physical education (Shek, & Law, Merrick, 2019; Barnett, et al., 2019; Wilhelmsen, & Sørensen, 2017), parent-child physical activity (Timmons, Naylor, & Pfeiffer, 2007; Fedewa, & Ahn, 2011; Engel, et al., 2018); and physical education materials at home (Rodrigues, Saraiva, & Gabbard, 2005; Miquelote, et al., 2012; Silva, et al., 2017).

Especially, parent-child physical activity play an important role in home environment. The parent-child activities of children aged between 3-6 are an important part of family life and an important means to stimulate the all-round development of children's physical, intellectual, moral and aesthetic ((Wang, et al., 2011; Huang, 2018; Xu, 2021). Parent-child physical activities refer to the activities between parents and children, with sports or physical activities as the main content, and are a significant form of communication between parents and children (Wang, et al., 2011). Parent-child physical activity is not only a simple usual activity, but also can effectively promote the emotional connection between family members. It is also an attitude and way of life. Parent-child sports activities build a bridge of spiritual communication between children and parents, between family and society, and draw closer parent-child relationship from a new perspective. Children can live, learn and grow opportunely in parent-child physical activities. The emotions can develop more healthily, and the society will be more pleasant-sounding (Ma, 2022; Lyu, 2022; Fan & Xiao, 2023).

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Additionally, parent-child physical activities can comprehensively develop young children's sports, language, cognition, emotion, originality, social interaction abilities. Through parent-child physical activity, children not only improve their physical quality, enhance parent-child relationship, and promote parent-children in happy game activities. Simultaneously, children will transfer their attitudes, methods, and values in dealing with objects and relational communication in activities to all aspects of children's life (Zhou, 2021).

The precise content of parent-child physical activity comprises sports activities and games with parents and children as the main activities in order to improve the physical and mental health of children and promote the harmonious development of families (Huang, 2018; Xu, 2021). Physical activities should have a clear purpose (physical health or sports and leisure), time and activity for no less than 10 minutes in a row), form of activity (walking, running, jumping, throwing, crawling, etc.), personnel (father or mother and children), circumstances such as location (at home, kindergarten, or outdoors), but not other intellectual or life play (Wang, et al., 2011). However, there are comparatively few studies on parent-child physical activity in China (Yang, 2013; Fan, 2019). More studies only focus on the importance of parent-child physical activity (Huang, 2018; Xu, 2021).

1.3 Statement of the Problem

Gross motor skills are main indicators of the level of growth and development for a child. Gross motor development composed of large muscle groups, often accompanied by powerful and gross contraction of the motor nerves of the whole body and energy ingesting of muscle activity. A series of gross movements constitute gross motor skills.

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In early childhood, the more common gross movements are walking, running, jumping, climbing, balancing, throwing, catching and throwing as well as kicking (Robinson et al., 2015; Cattuzzo, et al., 2014; Engel, et al., 2018).

The practice of gross motor movements during early year's period can not only encourage the development of fine movements, but also promote the learning of more complex motor skills, and influence the development of children's cognition, emotions, and social behavior. Children's physical education is an important foundation for the development of physical education (Amemiya, Suzuki, & Satoh, 2018).

With the changes in social existences, especially in recent years, the physical education of early childhood children was pay attention by whole society. However, tendency of teaching preschoolers like primary school students has become more serious in China. Some parents arrange their children to study different kinds of courses such as playing chess, painting and speech (Liu, 2021; Wang, 2022; Qi, 2022). The safety management of preschool has been continuously reinforced and children in the preschool education stage have a serious reduction in outdoor activity time and play time, and the number of physical education courses has been weakened (Qi, 2022).

Moreover, the urbanized work environment leaves most parents with no time to take care of their children and elders look after young child (Li, & Wang, 2022; Zeng, Huang, Chen, 2022). Because of the limited physical condition of the elderly, children raised by the elderly infrequently have the opportunity to go out of the house to engage in outdoor sports activities, resulting in significantly less physical activity (Zeng, Huang, Chen, 2022). With the gradual improvement of living standards and the

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incessant improvement of urban public facilities, many parents take their children out with different transportation such as car, bus, and underground train (Li, & Wang, 2022). There is an elevator for the means of transportation to go home, which imperceptibly lessens the opportunity for children to exercise in daily life. Furthermore, with the improvement of living standards and the development of urban transportation, it has become common for people to take a car when they go out and take the elevator when they go home, which imperceptibly makes people develop the habit of "don't want to move"(Li, & Wang, 2022). It is not difficult to find that young children need to take part in physical activity to improve their physical and cerebral health.

The advent of the information age has increased the frequency of children's exposure to multimedia, and they will sit in front of the electronic screen for a long time in their spare time and continue a position for a long time (Huang, 2021; Shen, 2021). It often causes children not to want exercise, or even not interested in sports, consequential in a deterioration in physical fitness and athletic ability, making physical weakness, and then leading to slow development of learning ability (Liu, Wang, Liu, 2021).

On the other hand, in the face of today's increasingly competitive society, many parents are shrouded in anxiety and worry that their children will lose at the starting line, many preschool children are experiencing outdoor games and activities time along with physical exercise being engaged by training classes and specialty classes (Sun, & Fan, 2019). Due to inadequate awareness of fitness among parents, lack of sufficient attention to the value of physical exercise for preschool children, and unnecessary protection and care, the opportunities for preschool children to participate

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in physical activities are nearly inadequate to a certain extent (Sun, & Fan, 2019).

Some parents do not know much about the value of sports activities, or they do not like sports (Sun, & Fan, 2019; Li, 2020; Feng, 2022). They do not pay enough attention to the physical quality of preschool children and the development of the sensitive period of movement, and they even worry about their children's sports injuries (Li, 2020). Therefore, the exercise time and amount of young children are affected to a certain extent due to their parents overprotect them. Parents need to change their boldness toward sports education and company their child to do more exercise somewhat than make available them with academic training classes.

With the fast development of social economy and changes in existence, the problem of childhood obesity in China is becoming more and more prominent. It is essential to take instant prevention and control measures (Ma, 2021). Developing children's motor skills can reduce chances of the burden of childhood obesity and developing unhealthy physical activity. Moreover, gross motor skills help in enhancing the development of long-term health outcomes in children and adolescents (Robinson et al., 2015; Cattuzzo, et al., 2014; Engel, et al., 2018). However, in China, there is insufficient research about how gross motor development of young children effect childhood obesity.

In the field of research on child development, the influence of the environment is considered a key factor in the development of children, especially the influence of the family environment (Miquelote, 2012; Bai, 2020). Home environment can arouse action, provides opportunities for action, thus stimulating the development of sports

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of children (Zhao, 2020; Morley, Till, Ogilvie, & Turner, 2015; Venetsanou, & Kambas, 2010; Yue, & Wang, 2013).

The gap was found that lack of studies to investigate whether parent-child physical activity at home can affect the gross motor development of young children. Whereas contemporary studies have reported the influence of home environment on children's gross motor development, most samples of such findings have been limited primarily to infants (Rodrigues, Saraiva, & Gabbard, 2005; Freitas, et al. 2013) and school-aged children who are more than seven years old (Lope et al., 2013; Ferreira, et al., 2018); and the environment of school (Chow, & Louie (2013). A similar situation in China, there has been minimal research examining the relationship between young children's gross motor development and the parent-child physical activity in home environment in China (Yue, & Wang, 2013; Wang, Hu, Chen, & Yang, 2018).

Moreover, majority of study focus on gross motor skill and did not conducted study to collect data from locomotor skills and object control skills. Questionnaires are the main survey instrument in previous studies of investigation on physical education and home environment; there is a gap in the literature as few families' gross motor development interventions for young children (Brian, Goodway, Logan, & Sutherland, 2017). There are many quantitative studies on this area but few experimental designs.

On the other hand, previous research on children's gross motor development mostly examines the overall mastery of large muscle movements of children in various places, or the impact of the development of large muscle movements on other abilities such as fine movements, cognition (Li & He, 2003; Geng, et al., 2015). Few studies focused

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on analyzing the specific situation of preschool children's gross motor skills like locomotor and object control skill (Dai, et al., 2017).

Therefore, the aim of this study was to examine the effects of parent-child physical activity on children's gross motor skills of preschool in Shanxi Province, China.

1.4 Research Questions

Based on the problem statement mentioned before, the following questions are set up:

1. Is there is any difference of child's gross motor skills in control and experiment groups before parent-child physical activity intervention?
2. Is there is any difference of child's gross motor skills in control and experiment groups after parent-child physical activity intervention?
3. Is there is any difference of parents' attitude towards children's physical education and sports materials at home before and after the parent-child physical activity intervention in control and experiment group?
4. Do parents' attitude towards children's physical education and sports materials at home have relationship with children's gross motor skills before and after the parent-child physical activity intervention?
5. Does parent-child physical activity intervention affect children's gross motor skills among preschoolers?

1.5 Objectives of the Study

The main objective of this study is to investigate the effect of parent-child physical activity intervention (dependent variable) on children's gross motor skills (independent variable) including child's locomotor and child's object control skills. Participants will be randomly assigned to control group and experiment group. The

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quasi-experimental group (Group A) received the intervention and control group (Group B) received no intervention.

Based on the above general objective, five specific objectives have developed as follows:

1. To investigate whether there is a difference of child's gross motor skills in control and experiment groups before parent-child physical activity intervention.
2. To investigate whether there is a difference of child's gross motor skills in control and experiment groups after parent-child physical activity intervention.
3. To investigate whether there is a difference of parents' attitude towards children's physical education and sports materials at home before and after the parent-child physical activity intervention in control and experiment group.
4. To investigate whether parents' attitude towards children's physical education and sports materials at home have relationship with children's gross motor skills before and after the parent-child physical activity intervention in control and experiment group.
5. To investigate whether parent-child physical activity intervention affect children's gross motor skills among preschoolers.

1.6 The Research Hypotheses

Based on the research questions, corresponding null hypotheses guided the research process:

1. Is there is any difference of child's gross motor skills in control and experiment groups before parent-child physical activity intervention?

   $H_0$1a: There is no difference of child's gross motor skills in control group before parent-child physical activity intervention.

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$H_0$1b: There is no difference of child's gross motor skills in experiment group before parent-child physical activity intervention.

2. Is there is any difference of child's gross motor skills in control and experiment groups after parent-child physical activity intervention?

   $H_0$2a: There is no difference of child's gross motor skills in control group after parent-child physical activity intervention.

   $H_0$2b: There is no difference of child's gross motor skills in experiment group after parent-child physical activity intervention.

3. Is there is any difference of parents' attitude towards children's physical education and sports materials at home before and after the parent-child physical activity intervention in control and experiment group?

   $H_0$3a: There is no difference of parents' attitude towards children's physical education before the parent-child physical activity intervention in control group.

   $H_0$3b: There is no difference of sports materials at home before the parent-child physical activity intervention in control group.

   $H_0$3c: There is no difference of parents' attitude towards children's physical education before the parent-child physical activity intervention in experiment group.

   $H_0$3d: There is no difference of sports materials at home before the parent-child physical activity intervention in experiment group.

   $H_0$3e: There is no difference of parents' attitude towards children's physical education after the parent-child physical activity intervention in control group.

   $H_0$3f: There is no difference of sports materials at home after the parent-child physical activity intervention in control group.

   $H_0$3g: There is no difference of parents' attitude towards children's physical education after the parent-child physical activity

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intervention in experiment group.

$H_0$3h: There is no difference of sports materials at home after the parent-child physical activity intervention in experiment group.

4. Do parents' attitude towards children'

5. Does physical education and sports materials at home have relationship with children's gross motor skills after the parent-child physical activity intervention in control and experiment group?

$H_0$4a: Parents' attitude towards children's physical education has no relationship with children's gross motor skills before the parent-child physical activity intervention in control group.

$H_0$4b: Sports materials at home has no relationship with children's gross motor skills before the parent-child physical activity intervention in control group.

$H_0$4c: Parents' attitude towards children's physical education has no relationship with children's gross motor skills before the parent-child physical activity intervention in experiment group.

$H_0$4d: Sports materials at home has no relationship with children's gross motor skills before the parent-child physical activity intervention in experiment group.

$H_0$4e: Parents' attitude towards children's physical education has no relationship with children's gross motor skills after the parent-child physical activity intervention in control group.

$H_0$4f: Sports materials at home has no relationship with children's gross motor skills after the parent-child physical activity intervention in control group.

$H_0$4g: Parents' attitude towards children's physical education has no relationship with children's gross motor skills after the parent-child physical activity intervention in experiment group.

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$H_0$4h: Sports materials at home has no relationship with children's gross motor skills after the parent-child physical activity intervention in experiment group.

6. Does parent-child physical activity intervention affect children's gross motor skills among preschoolers?

$H_0$5: Parent-child physical activity intervention does not affect children's gross motor skills.

1.7 Significance of the Study

The study is significant because it expects to benefit not only theoretical knowledge to the available literature on early childhood care and education but also provides practical experience of enhancing young children's gross motor development in home environment in China. On one hand, this study enriched the theories of Bronfenbrenner ecological systems theory, constructivism theory, and dynamic system theory. On the other hand, this study found that parent-child physical activity intervention can affect children's gross motor skills including child's locomotor and child's object control skills among preschoolers that provided beneficial information as reference for further studies.

The finding of this research attracted parents' attentions toward supporting their children's with doing more parent-child physical activity in home environments and result in the likely increasing physical development of young children. Parent-child physical activities gave parents a podium to understand the development of their children. This study was to help parents to develop a better understanding of parent-child physical activity, and gross motor skills of preschool children in Chinese.

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Combined with the actual needs of parents and children, this study provided them with some parent-child sports activities that parents, and children like, extend sports activities from schools to families, form a trinity education model, and guide parents to use spare time to accompany children to play games together. Thus, family becomes the second classroom to stimulate students' physical development. Parents become children's supplementary teachers and players, helping their child to return to the sports field in their extra time, so that children can get a moral time outside school.

Under the company of parents, young people are willing to participate in physical exercise, and can actively participate in exercise, and finally form a lifelong sports habit, take exercise as a part of daily life, and practice every day, so as to improve their physical fitness and promote the healthy growth of young children. Together, it can also improve the parenting ability of parents, find a strong point of cooperation for home parenting, and promote the healthy growth of children.

The researched of this study designed a group of interesting, safe and diversified parent-child physical activities for young children. Based on the psychological and physiological characteristics of young children, the parent-child physical activity program drives the eagerness of children and parents. Children's gross motor skills can be improved in parent-child physical activities.

This study can further improve the theoretical research on cooperative education between kindergartens and families. The findings would provide a benchmark for preschools in China irrespective of public or private institutions to build a strong relationship with parents to improve children's gross motor skills. Understanding more

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information of children's home environment is better for teachers in preschools to collaborate with parents and improve the teaching for children in the field of physical education. On the other hand, preschool teachers can understand the characteristic of children through communicating with parents so that to improve the artistic and scientific nature of the communication between teachers and parents and promote the development of teachers' professional quality.

1.8 Scope of this Study

This study investigated the effect of parent-child physical activity program on children's gross motor skills including child's locomotor and child's object control skills in a preschool in Changzhi city, Shanxi province, China. 66 children aged five to six years old participated in this research.

1.9 Definition of Key Terms

Motor Skills: defined as a coordinated design of movements acquired through practice containing the ability to execute movements efficiently to achieve intended outcomes (Dictionary of Sport and Exercise Science and Medicine cited in Wood, 2018).

Motor development*:* It is a field of study that attempts to examine the products and underlying processes of motor behavior changes across the life span (Haibach, Collier, & Reid, 2011).

Gross Motor Skills*:* using large muscle groups for controlled, goal directed movements (Neistadt & Crepeau, 1998, p.141) such as standing, walking, running, and sitting upright. It also includes eye-hand coordination skills such as ball skills like

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throwing, catching and kicking (Haibach, Collier, & Reid, 2011).

In this study, gross motor development refers to a synchronized pattern of movements acquired through practice involving the ability to execute movements effectively to achieve intended outcomes and it mainly involves child's locomotor and child's object control skills.

***Environment Setting**:* It refers to the immediate surroundings in which children are attempting to learn. It includes object props such as amenities, equipment, and supplies and also behavior setting such as the number of students in the class and their ability to attend to the instructional cues that provided by the instructor (Gallahue, & Donnelly, 2007).

***Home Environments**:* A reflection of the home environment and interactions in and around the home with family members Minuchin (1965). Moreover, Dunlap, Ester, Langhans and Fox (2006) stated that home environment contains complex elements, while these elements are creating individual or combined effects on children's developments in different domains and areas.

Parents' attitude: Parents attitude of physical activity in this study refer to parents belief and perspectives of physical activity.

Sport materials: important parts in home environment. In study, sport materials refer to the materials related to sport outside or inside of home environment which children and parents can play together.

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***Parent-child Physical Activity**:* Parent-child physical activity generally refers to parents and their child are summoned to take parent-child joint physical activities and guidance in in home environment including indoor and outdoor space (Yang, 2015).

In this study, parent-child physical activity means parent and their child take part in physical activities together in home environment.

1.10 Summary of Chapter

Children's identity development begins at home. As the children begin to spend time away from their families, their sense of self and family connections are tested. Home environment has a positive impact on children's current development as well as in relation to important connections that last a lifetime. Parents are first teachers for children to provide good home environment for the gross motor development of young children and parental involvement is critical for their children (Hsieh, et al., 2011; Zhao, 2020).

Parents doing physical activities with their children is an operative means to enhance parent-child relationship and cultivate good character of their child. Carrying out parent-child sports activities for children is favorable to the healthy development of children's body and mind, and enables them to develop their intelligence, hands-on ability, reaction ability, and creativity in an all-round way. Moreover, carrying out parent-child sports activities with children is conducive to stimulating the inner potential of children (Yang, 2015).

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Nevertheless, there are lack of related research of influence of parent-child physical activities in home environment on children's gross motor development in China. This study examined the effect of parent-child physical activities in home environment on children's gross motor skills child's locomotor and child's object control. Chapter 2 will present the related literature review in this study.

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