

**STIMULATING PROGRAMME FOR  
DELAYED MOTOR SKILLS OF 3-4 YEARS  
OLD RURAL CHILDREN**

**By**

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*Thesis submitted to CCS Haryana Agricultural University in  
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*Dedicated  
To  
Almighty*

# Certificate-I

This is to certify that this thesis entitled, “**Stimulating programme for delayed motor skills of 3-4 years old rural children**”, submitted for the degree of **Master of Science**, in the subject of **Human Development and Family Studies** to the CCS Haryana Agricultural University, is a bonafide research work carried out by **Neha Chaudhary (2004HS197M)** under my supervision and that no part of this thesis has been submitted for any other degree.

The assistance and help received during the course of investigation have been fully acknowledged.

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# Certificate-II

This is to certify that this dissertation entitled, “**Stimulating programme for delayed motor skills of 3-4 years old rural children**”, submitted by **Neha Chaudhary (2004HS197M)** to the CCS Haryana Agricultural University in partial fulfilment of the requirements for the degree of **Master of Science**, in the subject of **Human Development and Family Studies**, has been approved by the Student’s Advisory Committee after an oral examination on the same.

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**HEAD OF THE DEPARTMENT**

**DEAN, POST-GRADUATE STUDIES**

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## **CHAPTER - I**

# *Introduction*

The earliest and the most rapid development is motor skills development. In motor skills development, child emerges from the state of helplessness and dependence to the state of independence. Motor skills development means- the development of control over the bodily movements through the coordinated activities of nervous and muscular system. Motor skills do not develop through maturation alone, instead they must be learnt. Experience and opportunities to practice both the large and small muscle skills also contribute to the development of these skills in children. Motor skills development include gross motor skills, fine motor skills, perceptual motor skills, and visual motor skills.

Gross motor skills are the movements of the large muscles of body and include locomotion, manipulation and stabilization. Locomotor movements (going from one place to another) require the use of the large muscles in the trunk, legs and arms, where as manipulative movements (with the hands) require the use of the many small muscles of the hands. Gross motor activities include walking, running, throwing, lifting and kicking etc.

Fine motor skills involve the coordination of small muscles. Fine motor skills include reaching, grasping and manipulating objects with hands. Using the hands to move objects precisely and accurately is the task most referred to as fine motor skills. Girls tend to be more skillful in fine motor tasks earlier than boys, who appear to excel earlier in tasks requiring strength or power (Berk, 1996). Fine motor skills can be fostered in settings where the tools, children's experiences and cultural expectations are supportive (Berdekamp and Copple, 1997).

Perceptual motor skills is the use of senses to gain immediate awareness of what is happening around us, this awareness is achieved through hearing, smelling, touching, seeing and tasting. The perceptual process is rapid, continuous and ongoing.

Children always use all of their sensory capacities as they engage with the environment, explore, move or handle objects. Perceptual motor development is usually referred to movement activities that will lead to academic or cognitive outcomes (Payne and Isaacs, 1991).

The perceptual process improves with practice, generally improving rapidly during early childhood period (Williams 1983). All modes of receiving sensation from the environment are involved - hearing, smelling, touching, tasting and seeing. Frequently, multiple modes of sensation come from one source at the same time, requiring sensory integration. These sensations are transmitted to the brain through the nervous system. The brain uses the current information, organizes it and integrates it into previously learned concepts.

Visual motor skills involve the eye-hand co-ordination. During pre school years the child gains some eye-hand co-ordination so that he can care for himself to some extent and also help with a few household tasks. Encouraging self-help in a child and providing opportunities for him to be helpful with the household tasks brings him a deep sense of achievement and enhances his feeling of self-esteem and adequacy.

The two factors that underlie motor development are maturation and learning or practice. Learning should occur when maturation or readiness has taken place. In development of motor skills, the child needs opportunities for practising as well as encouragement. They need praise too so that the activity becomes enjoyable to them. Motor development finds expression through children's interaction with the environment.

Motor activities provide children with a source of entertainment. By playing with outdoor equipment and other play material, they can occupy themselves for a long time, thereby gaining relief from emotional tension as well. Vigorous outdoor play also builds good health. Children learn to use their muscles and are able to do things for themselves without help from others. Being able to help themselves enhances their self-esteem and feelings of security. Development of motor abilities is related to the individual's general personal and social adjustment. Control of one's own body can mean the beginning of self control in general. Motor skills development promotes good health, is a source of emotional catharsis and helps the child to achieve independence.

Motor skills are complex and involve almost every aspect of the child's psychological status, being ultimately related to perception and intelligence, to previous learning and present motivation, to emotional stability and to social relationships. Studies of motor development have revealed that there is a predictable pattern in motor development with predictable stages in this pattern and that there are individual differences in the rate of motor development.

Motor development is significant during pre-school years. Motor development motivates children to engage them in physical activities, entertain them, provide opportunities for socialization, achieve independence and strengthen self concept.

Causes of delayed motor development are many and include poor nutrition, poor health of children, poor parental involvement in motor activities and poor physical opportunities. If the motor development of the child is poor, he or she is likely to be left out of things and rejected by peer group due to poor performance in play activities. Delayed motor development also has negative impact on scholastic achievement of children. Peer rejection and poor scholastic achievement can lead to maladjustment and behavioral problems. Therefore, it is very important to promote motor development of children for their overall development.

Interventions may be intended either to correct problems, i.e., help children whose development is not proceeding normally or to further improve functioning of children who are not in difficulty (Resnick, 1984). Intervention thus, is an open process, that is

completed only when a given child or group of children no longer need help. The intervention may act directly on children by including new capacities and programmes in individual's or may attempt to modify the behavior of various people, institutions or media that influences the lives of children (Gholson and Rosenthal, 1984). So, keeping the above facts in view, the study on delayed motor development is taken into consideration with the following objectives :-

1. To assess the existing status of motor skills of 3-4 years old rural children.
2. To assess the maternal involvement in stimulation of motor skills of their 3-4 years old children.
3. To develop, implement and assess the impact of stimulating programme on motor skills of 3-4 years old rural children.

### **SCOPE OF THE STUDY**

Intervention planning may be seen as an effort to anticipate the factors that are required to minimize or avoid the clinical problems. The content of the programme will provide some home based simple techniques for improvement of motor skills. This type of study will help the parents, caregivers and researchers involved in betterment of children.

### **LIMITATIONS OF THE STUDY**

The present study was conducted with 3-4 years old rural children. The findings of the study have been generalized over the

localities but limited over the age groups. In view of limited resources, accessibility, and time, the size of sample was taken as large as possible in order to generalize the findings.

## **CHAPTER - II**

# *Review of Literature*

A comprehensive review of past studies is necessary in any research endeavour. The frame of a study is always based on some foundational principles. These principles formulate the theoretical construct of it. An attempt has been made in this chapter to include work of those studies related to this investigation under the following head :

- 2.1 Gross Motor Skills
- 2.2 Fine Motor Skills
- 2.3 Perceptual Motor Skills
- 2.4 Visual Motor Skills
- 2.5 Maternal Involvement in stimulation of Motor Skills
- 2.6 Intervention Programme

### **2.1 GROSS MOTOR SKILLS**

Brown *et al.* (1981) conducted an integrated study of physical education and music program in changing early childhood perceptual motor performance of preschool children. It was found that the integrated effect of music and physical education enhanced the acquisition of fundamental motor skills.

Crowe *et al.* (1987) focused on the relationship between the Bayley Scales of Infant Development and pre school gross motor and cognitive performance. He stated that early identification of disabilities enables early intervention by occupational therapists and other health professionals. Because the number of children who can be seen in therapy is limited, it is important to be able to identify those infants most likely to have deficits at a later age. Therefore, the outcome suggests that it is necessary to study and understand the relationship between infant's scores on early developmental assessments and later developmental outcomes.

Eliason and Jenkins (1990) reports that three-year-olds can walk and run, but their coordination fails them at times. Their large-muscle development is ahead of the small-muscle development. There is need to provide more opportunities to use large muscles than small muscles. As they lack small-muscle coordination, therefore, activities to promote these skills should be a part of curriculum. Musical activities, finger plays and dramatizing stories and poems promote motor development and creative movements.

Graham (1992) reviewed research on physical education for children. The author pointed out the persistent physical education practices that are not in the best interest of children and suggested the developmentally appropriate alternatives for physical and motor development.

Gallahue (1993) reported that gross motor skills such as walking or striking are fundamental motor skills that are the basic movements on which games or other more complex movements are formed. Children may acquire the fundamental motor skills on their own or with adult guidance. The author suggested that if children do not acquire proficiency by the age of 6 or 7 years, they may never acquire it during the elementary years.

Haywood (1993) reported that maturation is required for acquisition of the fundamental motor skills but by itself does not ensure the performance of the movement. Opportunities to move and learn specific skills are also necessary.

Hildebrand (1994) reported that three-year-olds are typically somewhat cautious as they practice new motor skills. Skills in using the body and holding the body erect are promoted during the outdoor play. The author reports that the child with the best-developed motor skills is frequently a leader in the group. Children with poor large motor skills at age five may never really become skilled and may need remedial help. The author further advocates that teachers of young children should help children learn and practice certain motor skills.

Olds *et. al.* (1994) Suggested activities for gross motor development of children. The authors describe that there must be opportunities for indoors and outdoors for gross motor development. Taking into consideration the individual needs of children, teachers should adapt experiences for children.

Marcon (1999b) examined language, self help, social, motor and adaptive development and mastery of basic skills of 721 four-years olds randomly selected from three different pre-school models. Children in the child-initiated model demonstrated grater mastery of basic skills than did children in programme in which academics were emphasized and skills were taught. Children in the combination model did significantly poor on all measures except self-help and development of social coping skills compared with children in either the child-initiated or academically directed models. Girls outperformed boys in all areas except gross motor development and play and leisure skills.

Sigmundsson and Haga (2000) emphasized on children and motor competence. While many studies have shown a significant correlation between motor problems and other problems in the social sphere, it has been difficult to establish causal relationships with any degree of confidence, as there appear to be several interactions which need to be taken into account. It is unusual for motor problems to simply disappear over time. It was concluded that in the absence of intervention, the syndrome is likely to continue to manifest itself.

Mandich *et al.* (2001) examined the cognitive strategies and motor performance in children with developmental coordination disorder. Although strategy use has a long history within the education and psychology literature, little discussion within the pediatric therapy has occurred and specific strategies were identified and elucidated. He concluded that a cognitive or 'top down' approach

was helpful for, improving the occupational performance of children with developmental coordination disorder (DCD).

Rintala and Linjala (2003) studied the scores on test of gross motor development of children with dysphasia. He was intended to assess the gross motor skill and trainability of children with dysphasia using the test of gross motor development. The gross motor skill scores of a sample of children with dysphasia, their trainability of the gross motor skills, and the intrarater reliability of the test were examined. He concluded that the children with language disorders do not possess a similar basic gross motor level as their peers without language problems.

Okely *et al.* (2004) has emphasized the relationship between body composition and fundamental movement skills among children. BMI (Body Mass Index) and waist circumference were significant predictors for FMS (Fundamental Movement Skills) and revealed that overweight boys and girls in all grades were less likely to possess high levels of FMS.

Wijnhoven *et al.* (2004) studied the assessment of gross motor development in WHO multicentres. The objective of this study was to describe the acquisition of selected gross motor milestones among affluent children growing up in different cultural settings. They found that six milestones were fundamental in acquiring self-sufficient erect locomotion and were simple to evaluate the motor development. Sitting without support, hand and knees crawling, standing with assistance,

walking with assistance, standing alone and walking alone were major factors.

Piek *et al.* (2006) examined on the relationship between fine and gross motor ability, self-perceptions and self-worth in children. He found the impact of fine and gross motor ability on self-perceptions of male and female children.

Shanwal (2006) conducted a study on fine, gross, perceptual and visual motor skills of 2-3 years old children. She found that there were no gender differences in different motor skills of children at pre-testing stage.

## **2.2 FINE MOTOR SKILLS**

Payne and Isaacs (1991) reported that fine motor development of the feet was found to be better in those children who participated in dance activities.

Girls tend to be more skillful in fine motor tasks earlier than boys, who appear to excel earlier in tasks requiring strength or power (Berk, 1996).

Bredekamp and Copple (1997) reported that fine motor skills can be fostered by providing facilities and experiences in school and home.

Missiuna ( 1998) reports that there is a group of children who are identified through the educational system as having handwriting or fine motor difficulties. These children experience difficulty in learning to print manuscript or cursive letters and have trouble with spacing and

organization of letters. Closer observation of these children revealed that they also have difficulty managing scissors, handling a ruler, doing up their zippers and buttons, and erasing. Most of these children also have trouble participating in structured and unstructured sports and leisure activities. The author reports that these are not simply children with poor handwriting they are children who are experiencing academic and life skill difficulties because of an underlying motor disorder. They need to be taught these skills in a more individualized way.

Parush *et al.* ( 1998 a) found that children with fine motor difficulties are more likely to have difficulty positioning their body appropriately to write, figuring out how to stabilize the paper and using consistent pencil pressure. Parush and associates (1998 b) also found that these children are likely to fatigue more early when writing. The authors report that children who have these types of motor problems often experience difficulty with any task that requires a coordinated motor action that depends upon continual feedback from their eyes or hands such as using scissors doing up buttons.

Giagazoglou *et al.* (2001) studied the gross and fine motor skills of left-handed preschool children. He used two motor subscales. A (gross motor) and D (fine motor) of the Griffiths Test No. II. The left-handed children were compared with few right-handers, matched for age, sex and preschool attended. right handed children received higher quotients than left handed on both Griffith's subscales, with a significant difference only on scale D. The outcome suggested that

these differences could be responsible for learning difficulties that left-hand children face later at school.

Costa (2005) observed the effects of music on fine motor abilities and found the significant improvement in fine motor skills for the children who received the lessons, and a significant difference in the speed of response was also found between the two groups at the end of two years of instruction. Shanwal (2006) conducted a study on fine, gross, perceptual and visual motor skills of 2-3 years old children. She found that there were no gender differences in different motor skills of children at pre-testing stage..

### **2.3 PERCEPTUAL MOTOR SKILLS**

Burnett (1983) studied the effect of rhythmic training on musical perception and motor skill development in 23 developmentally delayed children. Comparison of pre/post test scores on an inventory of observable musical behaviour and a survey of developmentally and perceptual skills indicated significant increases for the experimental group in musical perception and motor skill development.

The perceptual motor skills improve with practice, generally improving rapidly during the early childhood period. Improvement comes by receiving sensation from the environment by involving different senses-sight, audition, scent, taste and touch (Williams, 1983).

Tseng and Cermak (1993) stressed upon the influence of ergonomic factors and perceptual-motor abilities on handwriting

performance. He stated that difficulty with handwriting is one of the most frequent reasons that children in the public schools are referred to occupational therapy. Current research on the influence of ergonomic factors, such as pencil grip and pressure, and the perceptual-motor factors traditionally believed to affect handwriting, is reviewed. The final statement, suggested that factors such as visual perception show little relationship to handwriting, whereas tactile-kinesthetic, visual-motor and motor planning appear to be more closely related to handwriting.

Smith *et al.* (1998) emphasized on perceptual motor coupling in the development of grasp. He investigated the effects of haptic attributes of objects on infant's grasping patterns and evaluated whether this effect is influenced by the infant's age (i.e. phase of motor development). The haptic features of objects influence an infant's grasping patterns, and this influence changes with the infant's age, These results suggest that therapists attempt to match the haptic features of objects to the infant's perceptual-motor skill in intervention in order to enhance grasping patterns.

David *et at.* (2001) studied the acquisition of intellectual and perceptual motor skills. He concluded that intellectual skills and perceptual motor skills are psychologically more alike than different accords with the view that all knowledge is performatory.

Serrien *et at.* (2006) conducted a study on dynamics of hemispheric specialization and integration in the context of motor

control. He concluded that behavioural and neurophysiological evidence convincingly establish that the left hemisphere is dominant for motor skills that are carried out with either hand or those that require bimanual coordination.

Shanwal (2006) conducted a study on fine, gross, perceptual and visual motor skills of 2-3 years old children. She found that girls performed better in perceptual motor skills than boys after receiving intervention. At pre-testing stage there were no gender differences.

Thornton and Knoblich (2006) in his study on action perception and seeing the world through a moving body, stated that the acquisition of new motor skills can directly influence later visual perception even when an observer's eyes remain 'wide shut' during learning.

Yonas and Granrud (2006) studied the infant's perception of depth from cast shadows. The 7-months olds reached preferentially for the apparent nearer object. Another experiment showed that 5-month olds have the motor skills and motivation necessary to exhibit a reaching preference. The results are consistent with the hypothesis that depth perception based on cast shadows first appears between 5 and 7 months of age.

## **2.4 VISUAL MOTOR SKILLS**

Exner (1990) stated the zone of proximal development in in-hand manipulation skills of non-dysfunctional 3-and 4-year-old children. Approximately 30.00 per cent of the children in the study showed

marked improvement on the post test scores, whereas the others showed little change. The results indicate that both visual and verbal cues were effective in increasing the groups test scores. But no significant differences were found based on the type of cue provided.

Tseng and Cermak (1993) stressed upon the influence of ergonomic factors and perceptual-motor abilities on handwriting performance. He stated that difficulty with handwriting is one of the most frequent reasons that children in the public schools are referred to occupational therapy. Current research on the influence of ergonomic factors, such as pencil grip and pressure, and the perceptual-motor factors traditionally believed to affect handwriting, is reviewed. The final statement, suggested that factors such as visual perception show little relationship to handwriting, whereas tactile-kinesthetic, visual-motor and motor planning appear to be more closely related to handwriting.

Berninger *et al.* (2002) has stressed upon the improvement in writing and reading skills through different approaches and found remarkable results in the same.

Feder *et al.* (2005) studied the handwriting performance in preterm children compared with term peers at age 6 to 7 years. All children were assessed using the evaluation tool of children's - Handwriting -Manuscript and several sensorimotor measures. Preterm children demonstrated significantly lower legibility and slower speed scores compared with control children for most of the handwriting

tasks. He concluded that preterm infants are at high risk for developmental impairments at school age.

Shanwal (2006) conducted a study on fine, gross, perceptual and visual motor skills of 2-3 years old children. She found that boys performed better in visual motor skills than girls after receiving intervention. At pre-testing stage there were no gender differences.

## **2.5 MATERNAL INVOLVEMENT IN STIMULATION OF MOTOR SKILLS DEVELOPMENT**

Booth and Larock (1986) conducted a study on movement autonomy and the human environment on 3-6 years old children. They proposed a set of principles which evolved from their research. The authors suggested that appropriate groupings of children, teacher and parental involvement, participation by children and self-discipline promote movement autonomy among children.

Research studies also indicate that motor learning difficulties in young children is associated with emotional and behavioral difficulties (Fletcher-Flinn *et al.*, 1997; Kalverboer *et al.* 1990). Also, there is strong empirical evidence that the motor problems of children with developmental coordination disorder persist at least into adolescence (Cantell *et al.* 1994) and lead to the development of physical health, mental health and educational issues including poor physical fitness, poor social competence, academic problems and behavioral problem (Cantell *et al.* 1994; Geuze and Borger, 1993; Hay and Missiuna, 1998) The authors report that prevention of these issues is possible if

parents, teachers health professionals and the children themselves are educated about the disorder and learn some strategies to compensate for the motor difficulties.

Marcon (1999 a) examined relationships between parent school involvement and pre-schoolers development and academic performance. Results of this study revealed that increased parent school involvement and more active types of parent involvement were both associated with more positive development in all areas including language, self-help social, motor and adaptive development and greater mastery of early basic school skills in all subject areas. Although girls outperformed boys in all measures, increased parent school involvement was associated with especially positive development and academic performance in pre school boys.

Dhanda (2000) studied the intervention programme for the mothers of babies with developmental deficiencies. She found that both male and female children were at par with regard to psychomotor development in rural area, but they were different from urban children and the intervention programme was an effective tool for improving efficiency of children.

Hendriks *et al.* (2001) focused on the rehabilitation process of children with motor disabilities. He studied the level of parental involvement for the children with motor disabilities. He concluded that in about half of the cases, there was no initial assessment of the child, nor a jointly formulated plan of activities.

Ganadaki and Magill (2003) focused on mother's and father's interactions with children with motor delays. According to him, in early intervention programs, parents are often asked to teach their child new skills. When observing fathers teaching their child new skills, therapists should remember that fathers of children with motor delays (and typically developing children) may use a more task oriented communication style with less consideration of the child's actions than do mothers.

Shanwal (2006) examined the maternal involvement in different motor skills activities of 2-3 years old children. She found that at pre-testing stage there were no differences in maternal involvement in motor skills activities of control and experimental groups children. After intervention, it was found that in experimental group maternal involvement was significantly greater than mothers of control group children. It was also found that greater was the maternal involvement in different activities of fine, gross, perceptual and visual motor skills better were the children scores in different areas of motor skills development.

## **2.6 IMPACT OF INTERVENTION PROGRAMME ON MOTOR SKILLS DEVELOPMENT**

Platzer (1976) emphasized on the effect of perceptual motor training on gross-motor skill and self-concept of young children. Forty subjects were randomly assigned to experimental and control groups. The experimental group performed better on the gross-motor test, but

the results were not statistically significant. Specialized intervention with perceptual motor activities improved self-concept and these results were discussed in relation to recognizing the need for early screening and remediation of perceptual motor deficits exhibited by preschool children.

Culp *et al.* (1980) evaluated the sensorimotor versus cognitive-perceptual training effects on the body concept of preschoolers. He investigated the effects of two training programs on the body concept development of preschoolers as reflected in human figure drawings. All subjects were pre-tested with the Good-enough-Harris Drawing Test and post-tested with the same instrument after a one-month intervention training period. He concluded that the mean gain scores of the two experimental groups were significantly different, with a greater mean gain by the sensorimotor group.

Hewitt *et al.* (1983) studied the profiles of skill gain in delayed infants and young children. Total 38 developmentally delayed preschool children were entered into a study to assess their developmental progress on skills checklists during a 3-month period. All children were received on intervention programme. Results of his study showed that general children made greater progress in inspection/tracking and perceptual problem-solving skills than in motor, self-help and visual motor areas.

Resnick *et al.* (1988) emphasized on the developmental intervention program for high-risk premature infants and its effects on development and parent-infant interactions. He prepared a program of hospital and home-based developmental interventions designed to enhance the development of high-risk, preterm infants and the quality of communication between infants and their caregivers. The Bayley Scales of Infant Development were used to measure mental and psychomotor development. His developmental follow-up studies have documented that low birth weight infants are at high risk for mental and physical disabilities, despite recent advances in neonatal intensive care.

Poest *et al.* (1990) suggested a well designed programme for large muscle development which included 3 major categories i.e. fundamental movement skills, physical fitness and perceptual motor development. Based on the research findings, the author emphasized that children's free play versus guided movement experiences and planned motor activity centre's results were more dramatic and social play than motoric play. The authors suggested that young children should be provided with carefully planned movement experiences which will enhance fundamental motor and movement skills.

Ignico (1991) conducted a study with 53 Head Start children. The results clearly revealed that training in motor skills significantly improved the children's abilities. Boys and girls showed similar gains in their skills. This study provides evidence that as little as one hour a

week of instruction in physical skills can make a real difference in what children are able to do.

Williams (1992) studied the effects of instruction and practice on ball catching skill. It was a single-subject study of an 8-year old. According to him, an eight-year-old boy learned to make one-handed catches by involvement in three 30-minute periods of instruction and practice on seven consecutive days. An adult-like catching action (both hands) emerged in the second session and was used exclusively thereafter. He concluded that following the intervention, success and the catching action were similar to those of skillful ten-year old subjects.

Blondis *et al.* (1993) emphasized on early maturation of motor-delayed children at school-age. Statistical analysis indicated that the motor-delayed group made gains but did not close the gap between themselves and the motor-normal group during the 3-year study. Significant gain was made by the motor-delayed group on the motor coordination subtest of the motor-sensory test. The study supports the conclusion that motor-delayed children without early intervention fail to outgrow their motor delays at age 8 years.

Research studies conducted by Cratty (1994) and Paiano and Missiuna (1994) have demonstrated that parents notice motor learning difficulties in very young children with developmental coordination disorder. These children usually have difficulty learning novel motor skills but, once learned, many of the skills that are included on

developmental screening tests are performed adequately. Stimulation promotes learning new motor skills.

Mouradian and Als (1994) discussed about the influence of Neonatal Intensive Care Unit (NICU) caregiving practices on motor functioning of preterm infants. They indicated that functioning of preterm infants, particularly in terms of their motor systems, can be influenced by modification in caregiving. They concluded that infant cared for in an NICU with an individualized developmental care approach showed improved motor system functioning compared to infants cared for in the same NICU before the approach was adopted.

Kauranen *et al.* (1998) studied a 10-week strength training program and its effect on the motor performance of an unimpaired upper extremity. According to him, muscle strength training is one of the most common therapy methods in physical therapy programs, and the usual goal of this treatment is to improve muscle strength. He performed a 10- week strength training of the upper extremities and it increased muscle strength and some motor performance functions of the hand, including choice reaction time, tapping speed, and coordination.

Shahnaz *et al.* (1998) studied nutritional status, psychosocial development and the home environment of Indian rural children. Results of this study indicated that malnourished children attained developmental milestones at a later age. Development delay among the malnourished children was especially noticeable in the areas like vision

and fine motor, language and comprehension and personal and social development. The authors suggested that the factors identified in this study could be of great importance when developing relevant home-based intervention programme.

Vazir *et al.* (1998) studied nutritional status, psychosocial development and the home environment of Indian rural children. It was found that malnourished children attained developmental milestones at a later age. Development delay among the malnourished children was especially noticeable in the areas like vision and fine motor, language and comprehension. They further concluded that the factors identified in this study could be of importance when developing relevant intervention programme at home level.

Becker *et al.* (1999) studied motor organization in Very Low Birth Weight (VLBW) infants during caregiving and the effects of a developmental intervention. Results demonstrated that, (1) the overall amount of movement was less, the number of organized movements was greater, and the number of disorganized movements was less than during traditional handling; and (2) the amount of movement increased over time, but in the traditional condition it peaked at 32 weeks. Final results support positive effects of developmental handling and suggest the potential for reducing the prevalence of minor motor impairments in VLBW infants.

Chickgoudar and Khadi (2001) examined the impact of intervention programme on motor and mental development of rural

infants. At pre-testing stage, the mean psychomotor development index and mean mental development of rural infants. At pre-testing stage, the mean psychomotor development index and mean mental development scores of infants in control and experimental groups were similar. After intervention, at post-testing stage, the mean mental development index and psychomotor development index scores in the experimental group were higher as compared to that of control group. Results suggested that motor and mental development in infants can be enhanced by providing intervention programme.

Pless *et al.* (2001) studied the pre-school children with developmental coordination disorder and self-perceived competence and group motor skill intervention. Pre-school children with developmental co-ordination disorder are similar to peers of the same age regarding self- perception of their own competence in areas concerning school, peer relations and motor skills. The change in score in the perceived motor competence scale was significantly greater in the intervention than in the control subgroup, suggesting that the intervention increased individual awareness of motor competence.

Dewey *et al.* (2002) investigated the developmental coordination disorder and associated problems in attention, learning and psychosocial adjustment. Assessment of children with movement problems regardless of the degree or severity of these problems would examine a wide range of functions in addition to motor functioning. The conclusion indicated that such an approach, would assist in

determining the types of intervention that would provide the most benefit to these children.

Smith (2002) studied about the effectiveness of school-based occupational therapy intervention on handwriting. He made two groups of the children-intervention and comparison group. Students in the intervention group showed significant increase in in-hand manipulation. Students who received occupational therapy services demonstrated improved better legibility, but speed and numeral legibility did not demonstrate positive intervention effects.

Dankert *et al.* (2003) examined the occupational therapy effects on visual motor skills in preschool children. Planned comparison tests showed that students with developmental delays demonstrated statistically significant improvement in visual-motor skills and developed skills at a rate faster than expected when compared to typically developing peers on the VMI.

Schoemaker *et al.* (2003) had evaluated the effectiveness of neuromotor task training for children with developmental coordination disorder. The effectiveness of a neuromotor task training (NTT), recently developed for the treatment of children with developmental coordination disorder (DCD) by pediatric physical therapists in the Netherlands. The outcome suggested that no improvement was measured for the children in the no-treatment control group, whereas a significant improvement was found for children in the intervention

group for both quality of handwriting and performance on the movement after 18 treatment sessions.

Eickmann *et al.* (2003) emphasized on cognitive and motor development in a community based intervention of psychosocial stimulation in North-East Brazil. He compared the development of children with and without a programme of psychosocial stimulation in 'control' and 'intervention' sites. He used the Bayley Scales of Infant Development for such comparison. The intervention and control groups were similar at baseline for a range of socio-economic, demographic, environmental and biological variables, and their MDI and PDI were also similar for pre-testing stages. The outcome suggested that due to the intervention programme the significant improvements in cognitive and motor development of the children were recorded.

Goodway and Branta (2003) stressed upon influence of a motor skill intervention on fundamental motor skill development of disadvantaged preschool children. Pre and post intervention measure of the Object Control (OC) and locomotor subscales of the test of gross motor development were obtained for such children. Compared to the control group, the motor skill intervention group revealed significant higher locomotor and OC scores following the intervention than prior to the intervention.

Sugden and Chambers (2003) had discussed about intervention in children with developmental coordination disorder and the role of

parents and teachers. Both teachers and parents were able to provide effective intervention for majority of the children.

Schreiber (2004) had stressed on physical therapy for a child with gross motor developmental delay. Improvement was noted on the gross motor function after giving the early intervention.

Graf *et al.* (2004) had stressed upon correlation between BMI, leisure habits and motor abilities in childhood (CHIL T-project). Overweight/obesity is associated with a poorer body gross motor development and endurance performance. An active life style is positively correlated with a better gross motor development in first grade children. Therefore, he concluded that to prevent the negative consequences of physical inactivity and overweight/obesity, early intervention to support exercise and movement is recommended.

Apache (2005) emphasized on activity based intervention in motor skill development. Significant improvement in both locomotor and object control skills through the activity-based intervention was found compared to direct instruction. In another study, Edwards and Sarwark (2005) observed the improvement in infant and child motor development through intervention and said that intervention help the children to overcome or improve motor dysfunction and to help families grow more confident in caring for children with special needs. Luft and Buitrago (2005) also stated that successful learning of a motor skill requires repetitive training.

Shanwal (2006) conducted a study on fine, gross, perceptual and visual motor skills of 2-3 years old children and provided intervention to children with delayed motor skills. There was significant improvement in different motor skills of children after receiving intervention programme. She also found that boys performed better after intervention in gross motor and visual motor skills while girls performed better in perceptual motor skills.

## **CHAPTER - III**

# *Methodology*

The methodological research procedure adopted in conducting the present investigation is given in the following section under following heads.

- 3.1 Locale of the Study
- 3.2 Selection of Sample
- 3.3 Data Collection
- 3.4 Variables and their Measurement
- 3.5 Data Analyses

### **3.1 LOCALE OF THE STUDY**

Hisar district of Haryana state was selected purposively due to easy accessibility of the respondents for the present study.

#### **3.1.1 Selection of Area**

The study was conducted in Hisar-1 block of Hisar district and the block was selected at random.

#### **3.1.2 Selection of Villages**

From the Hisar-1 block, list of villages were prepared having at least 4 anganwadies in each village to meet the requirement of the

sample size. From this list, 2 villages were selected at random (i.e., Kaimri and Mangali). Children from Kaimri village were taken as control group children and from Mangali as experimental group children.

### **3.2 SELECTION OF SAMPLE**

From both the villages, list of children who were attending anganwadies in the age group of 3-4 years was prepared separately. From each list, 100 children were selected at random. Mothers of these children were also included in the study.

### **3.3 DATA COLLECTION**

This study was conducted in 3 phases :-

#### **3.3.1 Phase-I**

During this phase, data on socio-economic and personal profile of selected children (200) from both the villages was compiled. All these children were assessed for their motor skills development. For the assessment of motor skills (gross, fine, perceptual and visual) of children, observation checklist was used. From the gross, fine, perceptual and visual motor skills scores, the total motor skills scores of the children were computed. Total motor skills scores of children from both the villages were written separately in an ascending order. Fifty children each from the two villages with lowest scores were identified as below average children. Below average children were operationally defined as children with delayed motor skills. Below average children from Kaimri village acted as control group children

and below average children from Mangali village acted as experimental group children.

Intervention program was provided to experimental group children for a period of one month for promoting their motor skills. On alternate days. Intervention package was also provided to mothers of experimental group children for promoting their involvement in motor development activities with their children. Home based intervention was provided to children by involving their mothers a questionnaire-cum-interview schedule was used to assess the maternal involvement in stimulation of motor skills of their children.

### **3.3.2 Phase-II**

During this phase, stimulating activity programme was developed for promoting children's specific delayed motor skills development. The developed stimulating activity programme was given to the experts from the field of child development for evaluation. After incorporating necessary suggestions of experts, the stimulating activity programme was finalized.

### **Development and Implementation of Stimulating Activity Programme**

Stimulating activity programme was developed for enhancing the different areas of motor skills developments of children. Different activities were planned for each area.

Activities for intervention programme were prepared from simple to complex, keeping in mind the developmental milestones of 3-4 years

old rural children. The stimulating activity programme was then implemented on the children by involving their mothers for a period of one month on alternate days. The details of the programme are given in Annexure IV.

### **3.3.3 Phase-III**

Stimulating activity programme was provided to children with delayed motor skills in experimental group for a period of one month on alternate days. Two anganwadies were visited each day. This programme was also extended at home with the help of mothers to promote their knowledge and involvement in motor skills development of their children. After a gap of one month, with the help of same tool, the impact of stimulating activity programme was assessed. Before and after intervention performance of children were compared with the help of paired t-test to find out the significant differences in the development of children. Involvement of mothers at pre-testing stage and post-testing stage was also compared to see the improvement in their involvement in motor skills activities of their children.

## **3.4 VARIABLES AND THEIR MEASUREMENT**

### **3.4.1 Dependent Variables**

For the assessment of gross, fine and perceptual motor development of children, self-structured observation checklist was developed keeping in mind the developmental tasks of 3-4 years old children. The developed observation checklist was given to the experts from the field of child development for evaluation. After incorporating

necessary suggestions of experts, the observation checklist was finalized.

A complete list of material used for testing is given in Annexure II. The list was arranged in accordance with the age level as well as activities so that the examiner may quickly assemble the materials needed for a given child. The stairs were managed locally. All the objects which the child handled and likely to put into his mouth were washed from time to time with soap and warm water.

Every effort was made to put both, mother and child, at ease in order to elicit the most spontaneous and natural activities from the child. For instance, the appointment for testing was done at a time when the child was in normal mood.

**Scoring Criteria :** Each activity of motor skills development was given mark “one” as pass and “zero” as fail to each child. The sum of all the items was added in order to find out total score per child.

### **Visual Motor Integration (VMI)**

Visual motor skills development of children was assessed with the help of Keith E. Berry’s developmental test of visual motor integration (1989) [Annexure III].

The student test booklet of Keith E. berry and Norman A. Buktenica was used for evaluating the visual motor skills of children of 3-4 years of age group.

This test booklet also advocated the observations related with visual and motor abilities of the children. The combined efforts of both the activities provide us the results related with visual motor skills.

This Berry's test or scale of VMI is meant for conducting the studies on the children of age group from 02 to 19 years.

### **Scoring Criteria**

The score sheet for visual motor skills was prepared by photocopying the student test booklet of Keith E. Berry and Norman A. Buktenica. “one” and “zero” were the two scores given respectively for every success and failure of the child, in accordance with VMI recording and scoring sheet/scale. The VMI raw score was calculated by counting the all 1’s scored up to three consecutive 0’s (i.e., no scores). The VMI raw score was the total points scored by the child.

### **3.4.2 Independent variables**

In this section, measurement techniques followed for investigating some important independent variables have been described. Independent variables included personal and socio-economic variables. These were Sex, Birth order, Caste, Parental Education, Parental Occupation, Family Size, Type of family and Annual Income.

#### **Personal and Socio Economic Variables**

##### **i) Sex**

It refers to the gender of child.

<b>Categories</b>	<b>Scores</b>
Male	1
Female	2

##### **ii) Birth Order**

It refers to the ordinal position of the child among his/her siblings. Five categories were obtained from 1<sup>st</sup> to 5<sup>th</sup> born.

### **iii) Caste**

It was operationalised as a social stratum to which the child belonged. Caste as a major factor of socio economic status in rural families was recorded in the following manner:-

<b>Categories</b>	<b>Caste</b>	<b>Scores</b>
General	Jat, Bishnoi, Punjabi, Rajput, Baniya	1
SC	OD, Balmiki, Chura, Dhanak, Chamar, Pasi	2
BC	Barwar, Gujjar, Saini, Garhi, Lohar, Kamboj	3

### **iv) Parental Education**

It refers to the level of education of the fathers and mothers of the children under study. The level of education was categorized as follows:-

<b>Categories</b>	<b>Scores</b>
Illiterate	1
Primary to high school	2
10+1 to graduate	3
Post graduate	4

### **v) Parental Occupation**

Occupation of the fathers and mothers of the respondents was categorized in the following manner:-



### **Fathers occupation**

<b>Categories</b>	<b>Scores</b>
Labour	1
Business	2
Service	3

### **Mothers occupation**

<b>Categories</b>	<b>Scores</b>
Labour	1
Housewife	2
Business	3
Service	4

### **vi) Family Size**

Size of the family referred to the total number of members in the family. Respondents were divided into three categories on the basis of their family size.

<b>Categories</b>	<b>Number of family members</b>	<b>Scores</b>
Small	4 members	1
Medium	5-6 members	2
Large	7 members and above	3

### **vii) Type of Family**

Families were divided into three categories. Different categories were made as follows :-

<b>Categories</b>	<b>Scores</b>
Nuclear	1
Joint	2
Extended	3

#### **Viii) Annual Income**

It refers to the total income of the family from all resources. The families of the respondents are divided into different categories. These categories were made from highest income to lowest income of respondents. These are as given below:-

<b>Categories</b>	<b>Income range</b>	<b>Scores</b>
Low	upto 18000	1
Medium	18000 + to 28000	2
High	Above 28000	3

#### **3.4.3 Questionnaire for Maternal Involvement in Motor Skills Development**

Maternal Involvement in stimulating activities were taken as independent as well as dependent variable.

A questionnaire-cum-interview schedule was developed for assessment and promoting maternal involvement in motor skills development of their children. The developed questionnaire-cum-interview schedule was given to the experts from the field of child development for evaluation. After incorporating necessary suggestions of experts, the questionnaire-cum-interview schedule was finalized. This programme was developed for mothers to

improve their knowledge and involvement in enhancing their children's motor skills.

**Scoring Criteria** : Each activity of motor skill development was given a mark of "1" as pass and "0" as fail to each mother. The sum of all the items was added in order to find out total score of mothers for their involvement in children's motor skills activities.

Material knowledge was assessed in three levels as low, medium and high depending upon their obtained scores.

<b>Category</b>	<b>Range of Scores</b>
<b>Fine</b>	
Low	1
Medium	2
High	3
<b>Gross</b>	
Low	1
Medium	2
High	3
<b>Perceptual</b>	
Low	1
Medium	2
High	3
<b>Visual</b>	
Low	1
Medium	2
High	3
<b>Total motor skills</b>	
Low	1-6
Medium	7-9

High

>10

### **3.5 DATA ANALYSIS**

#### **Frequency distribution and percentages :**

Frequency distribution and percentages were used for personal profile of respondents.

#### **Mean :**

The mean value was worked out by dividing the sum of all observations by the corresponding number of observation.

#### **Standard deviation :**

Where,

$\sigma$  : Standard deviation

$x_i$  :  $i^{\text{th}}$  observation in the sample

$\bar{x}$  : Arithmetic mean of the sample

$\Sigma$  : Total number of observation =N

#### **ANOVA :**

Effect of gender (boys and girls) and group (control and experimental) on motor skills of children before and after intervention were examined using analysis of variance.

#### **Paired 't' test :**

It was used to test whether there was a significant difference in scores of experimental and control group children.

Where,

$d$  : Differences between the observation of the samples

$\bar{d}$  : Means of  $d$  values

$S$  : Standard deviation of  $d$  values

$n$  : Number of observations

**Correlation co-efficient :**

It was computed for :

Where,

$r_{xy}$  : Correlation coefficient between  $x$  and  $y$

$\Sigma xy$  : x and y = the variable being correlated

$\Sigma x^2$  : Sum of all squared value of x

$\Sigma y^2$  : Sum of all squared value of y

n : Number of pairs of variables

## **CHAPTER - IV**

# *Results and Discussion*

In this chapter results and discussions of the study are organized and presented under the following heads :-

- 4.1 Socio-personal and economic profile of respondents
- 4.2 Assessment of the existing status of motor skills of 3-4 years old rural children
- 4.3 Assessment of maternal involvement in stimulation of motor skills of their children
- 4.4 Development and implementation of stimulating programme
- 4.5 Impact of stimulating programme

The first section of this chapter provides an overview about the socio-personal and economic profile of respondents.

### **4.1 SOCIO-PERSONAL AND ECONOMIC PROFILE OF RESPONDENTS**

In this section socio-personal and economic profile of the respondents has been described for total sample and for experimental and control group children.

#### **4.1.1 Socio-Personal and Economic Profile of Total Sample**

Socio-personal profile of respondents of Kaimri and Mangali villages has been presented in Table 4.1.

In Kaimri village, 57 children were male and 43 were female. While in Mangali village 53 children were male and 47 were female.

As Table 4.1 shows, 4 children in Kaimri were first born, 24 were second born, 47 were third born, 22 were fourth born and 3 were fifth born. In Mangali, 6 children were first born, 46 were second born, 29 were third born, 16 were fourth born and 3 were fifth born.

In Kaimri, 39 children were in 3 - 3½ years age group and 61 were in 3½ - 4 years age group. In Mangali, 45 children were in 3 - 3½ years age group and 55 were in 3½ - 4 years age group.

With regard to occupation of fathers, in Kaimri, 63 fathers belonged to labour class, 30 belonged to business class and 3 belonged to service class. In Mangali, 64 fathers were from labour class followed by 24 from business class and 12 from service class.

Regarding occupation of mothers, as shown in Table 4.1, in Kaimri, 53 were housewives, 40 belonged to labour class and 7 were involved in business. In Mangali, 70 mothers were housewives followed by 22 from labour class, 2 from business and 3 from service class.

With regard to education of fathers, in Kaimri, 34 fathers were illiterate, 49 were matriculate and 17 were educated up to graduation

level. In Mangali, as Table 4.1 reveals, 43 fathers were illiterate, 47 were matriculate and 10 were educated up to graduation level.

**Table 4.1 : Socio-personal and Economic Profile of Respondents**

(N=200)

<b>Sr. No.</b>	<b>Variables</b>	<b>Categories</b>	<b>Kaimri</b>	<b>Mangali</b>
1.	Sex	Male	57	53
		Female	43	47
2.	Ordinal position	First	4	6
		Second	24	46
		Third	47	29
		Fourth	22	16
		Fifth	3	3
3.	Age group	3-3½ years	39	45
		3½-4 years	61	55
4.	Paternal occupation	Labour	63	64
		Business	30	24
		Service	7	12
5.	Maternal occupation	House wife	53	70
		Labour	40	22
		Business	7	2
		Service	---	3
6.	Paternal education	Illiterate	34	43
		Primary to High	19	47
		10+1 to Graduate	17	10
7.	Maternal education	Illiterate	69	71
		Primary to High	29	24
		10+1 to Graduate	2	4
		Post-graduate	---	1
8.	Family size	Large	34	44
		Medium	54	33
		Small	12	23
9.	Family type	Nuclear	63	51
		Joint	37	49
10.	Caste	General	63	26
		SC	17	58
		BC	20	16
11.	Income	Low (upto 18000)	57	61
		Middle (18000 to 28000)	26	27
		High (upto 28000)	17	12

Note : Figures indicate frequency as well as percentages

As shown in Table 4.1, education of mothers, ranged from illiteracy to post graduation. In Kaimri, 69 mothers were illiterate, 29 were matriculate and 2 were educated up to graduation level. In Mangali, 71 mothers were illiterate, 24 were educated up to high School level, and 4 were graduate and only one was post graduate.

Regarding the family size, in Kaimri, 34 children were from large families. Fifty four children belonged to medium size families and 12 children belonged to small families. In Mangali, 44 children belonged to large families, 33 to medium size families and 23 were from small families.

In Kaimri, 63 children belonged to nuclear families and 37 belonged to joint families. In Mangali, 51 children were from nuclear families and 49 from joint families.

As depicted in Table 4.1, with regard to caste, in Kaimri, 63 children were from general class, 17 from SC class and 20 from BC class. In Mangali, 26 children belonged to general class, 58 to SC class and 16 to BC class.

Table 4.1 also show the economic profile of respondents. In Kaimri, results showed that 57 families were from low income group, 26 families from middle income group and followed by remaining 17 families from high income group. Whereas in Mangali, maximum 61 families were from low income group followed by 27 families from middle income group and followed by remaining 12 families from high income group.



#### **4.1.2 Socio-Personal and Economic Profile of Control and Experimental Group Children**

In control group, 64.00 per cent children were male and 36.00 per cent children were female. While in experimental group 56.00 per cent children were male and 44.00 per cent were female.

As Table 4.2 shows, 2.00 per cent children in control group were first born, 28 per cent were second born, 44.00 per cent were third born, 22 were fourth born and 4.00 per cent were fifth born. In experimental group, 4.00 per cent children were first born, 46 per cent were second born, 30.00 per cent were third born, 16.00 per cent were fourth born and 4.00 per cent were fifth born.

In control group, 70.00 per cent children were in 3 - 3½ years age group and 30.00 per cent were in 3½<sup>+</sup> - 4 years age group. In experimental group, 68.00 per cent children were in 3 - 3½ years age group and 32.00 per cent were 3½<sup>+</sup> - 4 years age group.

With regard to occupation of fathers in control group, it was observed that 52.00 per cent fathers belonged to labour class, 38.00 per cent belonged to business class and 10.00 per cent belonged to service class. In experimental group, 60.00 per cent fathers were from labour class followed by 24.00 per cent from business class and 16 per cent from service class.

Regarding occupation of mothers, as shown in Table 4.2, in control group 38.00 per cent were housewives, 58.00 per cent belonged to labour class and 4.00 per cent were involved in business. In

experimental group, 24.00 per cent mothers were housewives followed by 72.00 per cent were from labour class, and 4.00 per cent from service class.

With regard to education of fathers, in control group, 30.00 per cent fathers were illiterate, 52.00 per cent were matriculate and 18.00 per cent were educated upto graduation level. In experimental group, as Table 4.2 reveals, 48.00 per cent fathers were illiterate, 40.00 per cent were matriculate and 12.00 per cent were educated upto graduation level.

Education of mothers, as shown in Table 4.2, ranged from illiteracy to graduation. In control group, 58.00 per cent mothers were illiterate, 40.00 per cent were matriculate and 2.00 per cent were educated upto graduation level. In experimental group, 68.00 per cent mothers were illiterate, 26.00 per cent were educated upto high school level, and 6.00 per cent were graduate.

Regarding the family size, in control group, 34.00 per cent children were from large families, 54.00 per cent children from medium size families and 12.00 per cent belonged to small families. In experimental group, 38.00 per cent children belonged to large families, 42.00 per cent belonged to medium size families and 20.00 per cent were from small families.

In control group, 66.00 per cent children belonged to nuclear families and 34.00 per cent belonged to joint families. In experimental

group, 58.00 per cent children were from nuclear families and 42.00 per cent were from joint families.

**Table 4.2 : Socio-personal and economic profile of control and experimental group children**

N=100

<b>Sr. No.</b>	<b>Variables</b>		<b>Control F (%)</b>	<b>Experimental F (%)</b>
1.	Sex	Male	32 (64.00)	28 (56.00)
		Female	18 (36.00)	22 (44.00)
2.	O r d i n a l position	First	1 (2.00)	2 (4.00)
		Second	14 (28.00)	23 (46.00)
		Third	22 (44.00)	15 (30.00)
		Fourth	11 (22.00)	8 (16.00)
		Fifth	2 (4.00)	2 (4.00)
3.	Age group	3 <sup>+</sup> -3½ years	35 (70.00)	34 (68.00)
		3½ <sup>+</sup> -4 years	15 (30.00)	16 (32.00)
4.	P a t e r n a l occupation	Labour	26 (52.00)	30 (60.00)
		Business	19 (38.00)	12 (24.00)
		Service	5 (10.00)	8 (16.00)
5.	M o t h e r occupation	Housewife	19 (38.00)	12 (24.00)
		Labour	29 (58.00)	36 (72.00)
		Business	2 (4.00)	---
		Service	---	2 (4.00)
6.	P a t e r n a l education	Illiterate	15 (30.00)	24 (48.00)
		Primary to high	26 (52.00)	20 (40.00)
		10+1 to graduate	9 (18.00)	6 (12.00)
7.	M a t e r n a l education	Illiterate	29 (58.00)	34 (68.00)
		Primary to high	20 (40.00)	13 (26.00)
		10+1 to graduate	1 (2.00)	3 (6.00)
8.	Family size	Large	17 (34.00)	19 (38.0)
		Medium	27 (54.00)	21 (42.0)
		Small	6 (12.00)	10 (20.00)
9.	Family type	Nuclear	33 (66.0)	29 (58.00)
		Joint	17 (34.00)	
10.	I n c o m e group	Low (upto 18000)	28 (56.00)	29 (58.00)
		Middle (18000 <sup>+</sup> to 28000)	12 (24.00)	16 (32.00)
		High (>28000)	10 (20.00)	5 (10.00)

Note : Figures indicate frequency as well as percentages

As depicted in Table 4.2, in control group, 56.00 per cent families were from low income group, 24.00 per cent families from middle income group and followed by remaining 20.00 per cent families from high income group. Whereas in experimental group, maximum 58.00 per cent families were from low income group followed by 32.00 per cent families from middle income group and followed by remaining 10.00 per cent families from high income group.

## **4.2 ASSESSMENT OF EXISTING STATUS OF MOTOR SKILLS OF CHILDREN**

In this section, first assessment of existing status of motor skills of total sample has been described. Then, assessment of existing status of motor skills of control and experimental group children are discussed.

### **4.2.1 Existing Status of Motor Skills of 3-4 Years Old Rural Children (Total Sample)**

***Village - wise assessment of motor skills of children*** : First objective of the study was to assess the existing status of motor skills of children. Table 4.3 shows the means and standard deviations of motor skills of children from Kaimri and Mangali villages. To examine whether there existed group differences in existing status of motor skills of Kaimri and Mangali villages, one-way analysis of variance was computed. Scores of different motor skills (fine, gross, perceptual, visual and total motor skills) were taken as dependent variables and village was taken as independent variables.

A one-way analysis of variance revealed that, main effect of village was not significant for fine motor skills  $F(1,199) = 0.11$ ; gross

motor skills,  $F(1,199) = 0.01$ ; perceptual motor skills,  $F(1,199) = 0.04$ ; visual motor skills,  $F(1,199) = 0.06$ ; and total motor skills,  $F(1,199) = 0.01$ ,  $p_s > 0.05$ .

**Table 4.3 : Means and SDs of motor skills of 3-4 years old children from Kaimri and Mangali villages**

(N=200)

Motor skills	Kaimri (N=100)	Mangali (N=100)	F-values
Fine	7.03±1.80	7.12±2.04	0.011
Gross	5.93±2.18	5.90±2.17	0.010
Perceptual	6.25±1.69	6.20±1.69	0.044
Visual	5.71±1.41	5.66±1.58	0.056
Total motor skills	24.97±5.94	24.91±6.01	0.005

It can be interpreted from these findings that there were no significant differences in existing status of motor skills of 3-4 years old rural children from Kaimri and Mangali villages. Similar results were obtained by Shanwal (2006)

**Gender differences in existing status of motor skills :** Gender differences in existing status of motor skills were also examined using one-way analysis of variances. Gender of child (male, female) was taken as independent variable and score of different motor skills (fine, gross, perceptual, visual, and total motor skills) were taken as dependent variables. Means and standard deviations are presented in Table 4.4 and Fig. 1. It was found that effect of gender was not significant for fine motor skills,  $F(1,199) = 0.003$ ; gross motor skills,  $F(1,199) = 0.01$ ;

perceptual motor skills,  $F(1,199) = 0.16$ ; visual motor skills,  $F(1,199) = 0.26$ ; and total motor skills,  $F(1,199) = 0.14$ ,  $ps > 0.05$ .

**Table 4.4 : Gender wise mean and SDs of motor skills of children**

(N=200)			
<b>Motor skills</b>	<b>Male (N=100)</b>	<b>Female (N=100)</b>	<b>F-values</b>
Fine	7.08±1.86	7.07±1.99	0.003
Gross	5.93±2.08	5.90±2.27	0.01
Perceptual	6.18±1.67	6.28±1.72	0.16
Visual	5.64±1.33	5.74±1.67	0.26
Total motor skills	25.08±5.69	24.77±6.30	0.14

These results indicate that there were no significant differences in existing status of motor skills of 3-4 years old boys and girls. Similar results were obtained by Shanwal (2006). She also found that there were no gender differences in fine, gross, visual and perceptual motor skills of 2-3 years old children at pre-testing stage.

***Age wise differences in existing status of motor skills :*** Age wise group differences were examined using one-way analysis of variance. Age of children was taken as independent variable and scores of different motor skills (fine, gross, perceptual, visual and total motor skills) were taken as dependent variables. Table 4.5 and Fig. 2 clearly indicates that there was significant effect of age on fine motor skills,  $F(1,199) = 53.83$ ; gross motor skills,  $F(1,199) = 84.96$ ; perceptual motor

skills,  $F(1,199) = 53.42$ ; visual motor skills,  $F(1,199) = 29.03$ ; and total motor skills,  $F(1,199) = 86.05$ ,  $p < 0.01$ .

As expected these results show that there were significant differences in existing status of motor skills of two age groups (3 - 3½ years and 3½<sup>+</sup> - 4 years).

**Table 4.5 : Age group wise means and SDs of motor skills of children**

(N=200)

<b>Motor skills</b>	<b>3-3½ years</b>	<b>3½-4 years</b>	<b>F-values</b>
Fine	6.07±1.64	7.83±1.75	53.83**
Gross	4.52±1.48	6.92±1.72	84.96**
Perceptual	5.32±1.48	6.88±1.52	52.42**
Visual	5.06±1.43	6.14±1.37	29.03**
Total motor skills	21.10±5.35	27.72±4.71	86.05**

\*\* Significant at  $p < 0.01$

Mean scores of older age group (3½<sup>+</sup> - 4 years) were significantly greater than those from younger age group (3 - 3½ years) for fine, gross, perceptual, visual and total motor skills. During early childhood years growth and development in rapid and children learn with each passing day the developmental tasks of their age group. These results get support from the finding of Shanwal (2006). She observed that scores of older age group (30-36 months) were greater than those from younger age group (24-29 months) for different areas of motor skills development at pre-testing stage.

#### 4.2.2 Existing Status of Motor Skills of Control and Experimental Group Children

Control and experimental group children were matched on the basis of total score of motor skills, and not on the basis of scores in different motor skills. Therefore, one-way analysis of variance was run to examine whether there existed group differences in different areas of motor skills. Table 4.6 clearly shows that there was no significant effect of group on fine motor skills,  $F(1, 99) = 0.026$ ; gross motor skills,  $F(1, 99) = 0.004$ ; perceptual motor skill,  $F(1, 99) = 0.028$ ; visual motor skills,  $F(1, 99) = 0.050$ ; and total motor skills,  $F(1, 99) = 0.017$ ,  $p > 0.05$ .

**Table 4.6 : Means and SDs of motor skills of control and experimental group children**

(N=100)

Motor skills	Control (N=50)	Experimental (N=50)	F-values
Fine	5.72±1.14	5.68±1.33	0.026
Gross	4.36±1.54	4.38±1.63	0.004
Perceptual	5.08±1.23	5.04±1.18	0.028
Visual	5.04±1.21	4.98±1.45	0.050
Total motor skills	20.22±3.76	20.12±3.84	0.017

As expected these results indicate that there were no significant differences in existing status of motor skills of control and experimental group children as these children were matched on the basis of their performance.

Thus, it can be said that existing status of motor skills of control and experimental group children was similar.

**Gender differences in existing status of motor skills of control and experimental group children :** Gender differences in existing status of motor skills of control and experimental group children were also examined by computing one-way analysis of variance. It was found that effect of gender was not significant for fine motor skills,  $F(1, 99) = 1.66$ ; perceptual motor skills,  $F(1, 99) = 1.14$ ; and visual motor skills,  $F(1, 99) = 0.82$ ,  $ps > 0.05$ . Significant gender differences were observed for gross motor skills,  $F(1, 99) = 5.28$  and total motor skills,  $F(1, 99) = 5.02$ ,  $ps < 0.05$ . Means and SDs are presented in Table 4.7.

**Table 4.7 : Gender wise means and SDs of motor skills of control and experimental group children**

(N=100)

Motor skills	Male (N=50)	Female (N=50)	F-values
Fine	5.88±1.04	5.44±1.29	1.66
Gross	4.72±1.55	3.72±1.32	5.28*
Perceptual	5.22±1.13	4.83±1.38	1.14
Visual	5.16±1.05	4.83±1.47	0.82
Total motor skills	20.09±3.39	18.67±3.99	5.02*

\*Significant at  $p < 0.05$

It can be interpreted from these findings that existing status of fine, perceptual and visual motor skills was not significantly different

for boys and girls. However, it was found that mean scores of gross motor skills ( $M = 4.72$ ) and total motor skills ( $M = 20.09$ ) of boys were significantly greater than those of girls ( $M_s = 3.72$  and  $18.67$  respectively). These results get support from the finding of Mareon (1999b) indicating that boys preferred better in gross motor skills than girls. Whereas Berk (1996) pointed out that girls out performed boys in fine motor skills. Shanwal (2006) also found that girls performed better in perceptual motor skills as compared to boys.

**Age group wise differences in existing status of control and experimental group children :** To examine the age group wise differences in existing status of control and experimental group children, one-way analysis of variance was computed. The impact of age group was not significant for fine motor skills,  $F(1, 99) = 2.91$ ; perceptual motor skills,  $F(1, 99) = 1.47$ ; and visual motor skills,  $F(1, 99) = 1.93$ ,  $p_s > 0.05$ . The impact of age group was found to be significant for gross motor skills,  $F(1, 99) = 19.15$ ,  $p < 0.01$  and total motor skills,  $F(1, 99) = 7.12$ ,  $p < 0.05$ . Means and SDs are presented in Table 4.8.

**Table 4.8 : Age group wise means and SDs of motor skills of control and experimental group children**

(N=100)

Motor skills	3-3½ years	3½-4 years	F-values
Fine	5.54±1.17	6.13±0.99	2.91
Gross	3.83±1.40	5.60±1.06	19.15**
Perceptual	4.94±1.30	5.40±0.99	1.47
Visual	4.89±1.18	5.40±1.24	1.93

Total motor skills	19.34±4.07	22.27±1.75	7.12*
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\*Significant at  $p < 0.05$

\*\*Significant at  $p < 0.01$

From these results, it can be interpreted that for gross motor and total motor skills mean scores of older age group children (Ms = 5.60 and 22.27 respectively) were significantly greater than children from younger age group (Ms = 3.83 and 19.34 respectively). Although not significantly different, as shown in Table 4.8 mean scores of older age group children were higher than those from younger age group for fine, perceptual and visual motor skills. The reason for non significant differences could be that children with delayed motor skills were selected for control and experimental groups. This might have overcome the age group differences. That older children performed better also get support from the findings of Shanwal (2006). In a study with 2-3 years old children, she obtained similar results.

#### **4.3 ASSESSMENT OF MATERNAL INVOLVEMENT IN STIMULATION OF MOTOR SKILLS OF THEIR CHILDREN**

##### **4.3.1 Assessment of Maternal Involvement in Stimulation of Motor Skills of Children (Total Sample)**

*Maternal involvement in stimulation of motor skills of children in Kaimri and Mangali villages* : Maternal involvement in stimulation of motor skills of their children was assessed and analysis of variance was used to examine village wise differences in maternal involvement. Village (Kaimri and Mangali) was taken as independent variable and involvement in different motor skills activities (fine, gross, perceptual, visual and total motor skills) were taken as dependent variables. The impact of village was not significant for fine motor skills,

F (1, 199) = 0.10; gross motor skills, F (1, 199) = 0.02; perceptual motor skills, F (1, 199) = 0.11; visual motor skills, F (1, 199) = 0.03 and total motor skills, F (1, 199) = 0.17, ps > 0.05.

**Table 4.9 : Village wise mean score and SDs of maternal involvement in stimulating motor skills activities**

(N=200)

<b>Motor skills</b>	<b>Kaimri (N=100)</b>	<b>Mangali (N=100)</b>	<b>F-values</b>
Fine	2.65±0.87	2.61±0.91	0.10
Gross	2.34±0.98	2.32±1.00	0.02
Perceptual	1.57±0.89	1.53±0.85	0.11
Visual	1.29±0.76	1.26±0.83	0.03
Total motor skills	7.85±2.14	7.73±1.99	0.17

These results clearly indicate that there were no significant differences in maternal involvement in stimulating activities for motor skills of their children in both the villages. Means and SDs are presented in Table 4.9. Similar results were obtained by Shanwal (2006) with 2-3 years old children.

**Maternal involvement in stimulation of motor skills of boys and girls:** Maternal involvement in stimulation of motor skills activities of boys and girls was analysed using one-way analysis of variance. Gender differences for maternal involvement were not found significant for fine motor skills, F (1,199) = 0.57; gross motor skills, F (1, 199) = 1.96; perceptual motor skills, F (1, 199) = 2.45; visual motor skills, F

(1, 199) = 0.16 and total motor skills,  $F(1, 199) = 3.27$ ,  $ps > 0.05$ . Means and SDs are presented in Table 4.10.

**Table 4.10 : Gender wise mean score and SDs of maternal involvement in stimulating motor skills activities**

(N=200)			
<b>Motor skills</b>	<b>Boys (N=100)</b>	<b>Girls (N=100)</b>	<b>F-values</b>
Fine	2.67±0.91	2.58±0.86	0.57
Gross	2.42±0.97	2.22±1.00	1.96
Perceptual	1.64±0.89	1.44±0.84	2.45
Visual	1.30±0.81	1.26±0.77	0.16
Total motor skills	8.03±2.16	7.50±1.91	3.27

These results clearly indicate that there were no significant differences in maternal involvement in stimulating activities for motor skills of boys and girls. It can be interpreted that mothers had similar attitude for development of motor skills of boys and girls and therefore involved themselves to a similar extent in motor skills development of their children.

***Maternal involvement in stimulation of motor skills two age groups*** : Maternal involvement in stimulation of motor skills of their children in two age groups was assessed. One-way analysis of variance was used to examine the maternal involvement in stimulation activities of two age groups. The impact of age group was not significant for fine motor skills,  $F(1, 199) = 1.25$ ; gross motor skills,  $F(1, 199) = 0.47$ ; perceptual motor skills,  $F(1, 199) = 0.48$ ; visual motor skills,  $F(1, 199) = 0.16$ .

= 3.69 and total motor skills,  $F(1, 199) = 3.39$ ,  $p > 0.05$ . Means and SDs are presented in Table 4.11.

**Table 4.11 : Age group wise means and SDs of maternal involvement in stimulating motor skills activities**

(N=200)			
<b>Motor skills</b>	<b>3-3½ years (N=100)</b>	<b>3½-4 years (N=100)</b>	<b>F-values</b>
Fine	2.55±0.90	2.69±0.88	1.25
Gross	2.27±0.94	2.37±1.03	0.47
Perceptual	1.50±0.87	1.59±0.87	0.48
Visual	1.15±0.83	1.37±0.75	3.69
Total motor skills	7.48±1.86	8.02±2.18	3.39

These results clearly indicate that there were no significant differences in maternal involvement in stimulating activities for motor skills of two age groups. It can be interpreted that mothers had similar attitude for development of motor skills of two age groups. Similar results were obtained by Shanwal (2006)

#### **4.3.2 Assessment of Maternal Involvement in Stimulation of Motor Skills of Control and Experimental Group Children**

***Maternal involvement in stimulating motor skills activities of control and experimental group children*** : Maternal involvement scores in stimulating motor skills activities of control and experimental group children were computed and one-way analysis of variance was run to examine whether there existed group differences. Table 4.12 clearly shows that there was no significant effect of group on fine motor skills,  $F(1, 99) = 0.045$ ; gross motor skills,  $F(1, 99) = 0.009$ ; perceptual

motor skills,  $F(1, 99) = 0.046$ ; visual motor skills,  $F(1, 99) = 0.016$ ; and total motor skills,  $F(1, 99) = 0.087$ ,  $ps > 0.05$ . Means and SDs are presented in Table 4.12 and Fig. 5.

**Table 4.12 : Mean scores of maternal involvement in stimulating motor skills of control and experimental group children**

(N=100)

<b>Motor skills</b>	<b>Control (N=50)</b>	<b>Experimental (N=50)</b>	<b>F-values</b>
Fine	2.64	2.60	0.045
Gross	2.32	2.30	0.009
Perceptual	1.56	1.52	0.046
Visual	1.26	1.24	0.016
Total motor skills	7.78	7.66	0.087

The results indicate that there were no significant differences in maternal involvement in stimulating motor skills activities of control and experimental group children. Similar results were obtained by Shanwal (2006). She also found that at pre-testing stage, there were no differences in motor skills of 2-3 years old children in control and experimental groups.

***Maternal involvement in stimulation of motor skills of boys and girls:*** Maternal involvement in stimulation of motor skills activities of boys and girls was analysed using one-way analysis of variance. Gender differences for maternal involvement were not found significant for fine motor skills,  $F(1,99) = 1.08$ ; gross motor skills,  $F(1, 99) = 1.16$ ; perceptual motor skills,  $F(1, 99) = 2.86$ ; visual motor skills,  $F(1, 99) =$

0.07 and total motor skills,  $F(1, 99) = 3.69$ ,  $p > .05$ . Means and SDs are presented in Table 4.13 and Fig. 3.

**Table 4.13 : Mean scores and SDs of maternal involvement in stimulating motor skills of boys and girls of control and experimental group**

(N=100)

<b>Motor skills</b>	<b>Boys (N=50)</b>	<b>Girls (N=50)</b>	<b>F-values</b>
Fine	2.70±0.88	2.50±0.88	1.086
Gross	2.40±0.91	2.17±1.17	1.16
Perceptual	1.67±0.95	1.35±0.86	2.86
Visual	1.27±0.84	1.23±0.73	0.07
Total motor skills	8.03±2.03	7.25±1.94	3.69

These results clearly indicate that there were no significant differences in maternal involvement in stimulating activities for motor skills of boys and girls. It can be interpreted that mothers had similar attitude for development of motor skills of boys and girls and therefore involved themselves to a similar extent in motor skills development of their children. Shanwal (2006) also reported similar findings.

**Maternal involvement in stimulation of motor skills two age groups :** Maternal involvement in stimulation of motor skills of their children in two age groups was assessed. One-way analysis of variance was used to examine the maternal involvement in stimulation activities of two age groups. The impact of age group was not significant for fine motor skills,  $F(1, 99) = 2.46$ ; gross motor skills,  $F(1, 99) = 0.02$ ; perceptual motor skills,  $F(1, 99) = 0.09$ ; and total motor skills,  $F(1, 99)$

= 3.24,  $P_s > 0.05$ . The impact of age group was found significant for visual motor skills,  $F(1, 99) = 6.67, p < 0.05$ .

**Table 4.14 : Mean scores and SDs of maternal involvement in stimulating motor activities for two age groups in control and experimental group children**

(N=100)

<b>Motor skills</b>	<b>3-3½ years (N=50)</b>	<b>3½-4 years (N=50)</b>	<b>F-values</b>
Fine	2.52±0.92	2.84±0.97	2.46
Gross	2.32±0.95	2.29±1.19	0.02
Perceptual	1.52±0.90	1.58±0.99	0.09
Visual	1.12±0.80	1.55±0.72	6.67*
Total motor skills	7.48±1.89	8.26±2.24	3.24

\*Significant at  $p < 0.05$

From these results, it can be interpreted that mean score of visual motor skills of older age group children ( $M = 1.55$ ) were significantly greater than children from younger age group ( $M = 1.12$ ). As shown in Table 4.14 and Fig. 4, although not significantly different, mean scores of older age group children were higher than those from younger age group for fine, gross, perceptual and total motor skills. That maternal involvement in visual motor skills was greater for older age group, might be due to the fact that they were developing eye-hand coordination in children to make them ready for academic preparation. Otherwise also, maternal involvement in different motor skills activities was higher for older age group.

#### **4.3.3 Level of maternal involvement in stimulating activities of children :**

***Village-wise maternal Involvement in stimulating motor skills activities of children*** : As presented in Table 4.15 majority of mothers from Kaimri (76.00%) and Mangali (73.00%) villages had medium level of involvement in fine motor skills activities, gross motor skills activities (72.00 and 69.00% respectively) and in total motor skills activities (60.00 and 63.00% respectively).

**Table 4.15 : Village wise level of maternal involvement in stimulating motor skills activities of children**

(N=200)

<b>Level of motor skills</b>	<b>Kaimri</b>	<b>Mangali</b>
<b>Fine</b>		
Low	9 (18.00)	10 (20.00)
Medium	76 (152.00)	73 (146.00)
High	15 (30.00)	17 (34.00)
<b>Gross</b>		
Low	15 (30.00)	20 (40.00)
Medium	72 (144.00)	69 (138.00)
High	13 (26.00)	11 (22.00)
<b>Perceptual</b>		
Low	48 (96.00)	44 (88.00)
Medium	36 (72.00)	46 (92.00)
High	16 (32.00)	10 (20.00)
<b>Visual</b>		
Low	57 (114.00)	57 (114.00)
Medium	41 (82.00)	39 (78.00)
High	2 (4.00)	4 (8.00)
<b>Total motor skills</b>		
Low	29 (58.00)	30 (60.00)
Medium	60 (120.00)	63 (126.00)
High	11 (22.00)	7 (14.00)

Note : Figures in table indicate frequencies as well as percentage

Maternal involvement was low in perceptual (48% in Kaimri and 44.00% in Mangali) and visual (57.00% each in both the villages) motor skills activities.

These results indicate that maternal involvement in finding gross motor skills activities was medium, while in perceptual and visual motor skills activities was low. Similar findings are reported by Shanwal (2006) for 2-3 year old children.

***Maternal involvement in stimulating motor skills activities of control and experimental group*** : As depicted in Table 4.16 in control and experimental groups also, maternal involvement was medium in fine (78.00% each in both the groups) and gross motor skills activities (72.00% in control and 74.00% in experimental group children); low in perceptual (50.00% in control and 46.00% in experimental) and visual motor skills activities (56.00% in control and 58.00% in experimental group).

There results indicate that maternal involvement in different motor skills activities was low to medium in both the groups. Similar results were obtained by Shanwal (2006) for 2-3 years old children.

#### **4.3.3 Correlation between maternal involvement in stimulating activities and motor skills development of children**

***Correlations between maternal involvement and motor skills development of children (Total Sample)*** : Correlations were computed between maternal involvement scores for different areas of motor skills development and children's existing status for fine, gross,

**Table 4.16 : Level of maternal involvement in motor skills activities of control and experimental group children**

(N=100)

<b>Level of motor skills</b>	<b>Control F (%)</b>	<b>Experimental F (%)</b>
<b>Fine</b>		
Low	7 (14.00)	6 (12.00)
Medium	35 (70.00)	35 (70.00)
High	8 (16.00)	9 (18.00)
<b>Gross</b>		
Low	8 (16.00)	8 (16.00)
Medium	36 (72.00)	37 (74.00)
High	6 (12.00)	5 (10.00)
<b>Perceptual</b>		
Low	25 (50.00)	23 (46.00)
Medium	15 (30.00)	21 (42.00)
High	10 (20.00)	6 (12.00)
<b>Visual</b>		
Low	28 (56.00)	29 (58.00)
Medium	22 (44.00)	19 (38.00)
High	---	2 (4.00)
<b>Total motor skills</b>		
Low	15 (30.00)	17 (34.00)
Medium	31 (62.00)	30 (60.00)
High	4 (8.00)	3 (6.00)

Note : Figures in parentheses indicate percentage

**Table 4.17 : Correlation between maternal involvement in stimulating activities and existing status of motor skills of children**

(N=200)

<b>Maternal involvement areas</b>	<b>Motor skills of children</b>				
	<b>Fine</b>	<b>Gross</b>	<b>Perceptual</b>	<b>Visual</b>	<b>Total motor skills</b>
Fine	0.18*	0.19*	0.17*	0.06	0.17*
Gross	0.16*	0.18*	0.15*	0.13	0.14*
Perceptual	0.15*	0.16*	0.28**	0.17*	0.17*
Visual	0.17*	0.14*	0.13	0.15*	0.14*
Total motor skills	0.28**	0.29**	0.31**	0.22**	0.27**

\*Significant at  $p < 0.05$

\*\*Significant at  $p < 0.01$



perceptual, visual and total motor skills, As presented in Table 4.17, maternal involvement in fine motor skills activities were mildly positively correlated with fine ( $r = 0.18, p < 0.05$ ), gross ( $r = 0.19, p < 0.05$ ), perceptual ( $r = 0.17, p < 0.05$ ) motor skills and total motor skills ( $r = 0.17, p < 0.05$ ) of children. Maternal involvement in gross motor activities were also mildly positively correlated with fine, gross, perceptual and total motor skills of children ( $r_s = 0.16, 0.18, 0.15$  and  $0.14$  respectively,  $p_s < 0.05$ ).

Maternal involvement in perceptual motor activities were mildly positively correlated with fine ( $r = 0.15, p < 0.05$ ), gross ( $r = 0.16, p < 0.05$ ), perceptual ( $r = 0.28, p < 0.01$ ), visual ( $r = 0.17, p < 0.05$ ) motor skills and total motor skills ( $r = 0.17, p < 0.05$ ) of children. Maternal involvement in visual motor activities were also mildly positively correlated with fine, gross, visual and total motor skills of children ( $r_s = 0.17, 0.14, 0.15$  and  $0.14$  respectively,  $p_s < 0.05$ ). Maternal total involvement in motor activities were mildly positively correlated with fine, gross, perceptual, visual and total motor skills ( $r_s = 0.28, 0.29, 0.31, 0.22$  and  $0.27$  respectively,  $p_s < 0.01$ ).

These results indicate that maternal involvement in motor skills activities was positively correlated with motor skills development of their children. Higher the maternal involvement in different motor skills activities better were the different motor skills development of children. These findings are in line with previous research conducted by Shanwal (2006).



***Correlations between maternal involvement and motor skills development of Control and Experimental Group Children :***

Similar correlations were computed for control and experimental group children. As presented in Table 4.18, similar results were obtained indicating that maternal involvement in different areas of motor skills were positively correlated with different areas of motor skills development. Similar results were obtained by Shanwal (2006) in a study conducted with 2-3 years old children's.

**Table 4.18 : Correlation between maternal involvement in stimulating activities for motor skills development of control and experimental group children**

(N=100)

Maternal involvement areas	Motor skills of children				
	Fine	Gross	Perceptual	Visual	Total motor skills
Fine	0.21*	0.18*	0.19*	0.11	0.18*
Gross	0.19*	0.19*	0.16	0.14	0.14
Perceptual	0.22**	0.18*	0.31**	0.21**	0.20*
Visual	0.14	0.14	0.10	0.25**	0.14
Total motor skills	0.33**	0.30**	0.32**	0.30**	0.29**

\*Significant at  $p < 0.05$

\*\*Significant at  $p < 0.01$

**4.4 DEVELOPMENT AND IMPLEMENTATION OF STIMULATING PROGRAMME**

Stimulating programme was prepared which included activities for four aspects namely gross, fine, perceptual and visual motor skills of 3 to 4 years old children.

Activities for stimulating programme were prepared from simple to complex, keeping in mind the developmental milestones of 3 to 4 year old children. Five activities were given for each area.

The developed stimulating programme was given to the experts from the field of child development. After incorporating necessary suggestions of the experts, the stimulating programme was modified and finalized.

The developed stimulating programme was implemented on the below average children in experimental group (Mangali village) by involving their mothers for a period of one month on alternate days. Details of the programme are provided in Annexure .

#### **4.5 IMPACT OF STIMULATING PROGRAMME**

Impact of stimulating programme was assessed on motor skills development of children and as well as on maternal involvement in stimulating activities for motor skills development of their children. Pre and post testing performance of children was assessed and compared using paired-t test. Pre and post testing involvement of mother, was also assessed and compared by paired-t test.

##### **4.5.1 Impact of Intervention Programme on Motor Skills Development of Children**

Pre and post testing performance of experimental and control group children was assessed. Paired-t tests were used separately for experimental and control group children.

**Pre and Post Testing Performance of Experimental Group**

**Children** : Impact of intervention programme on motor skills development of experimental group children was assessed with the help of paired t-test. Pre and post testing mean scores, mean differences and paired t-values of experimental group children are presented in Table 4.19 and Fig. 7.

**Table 4.19 : Pre and post testing paired t-values for motor skills of experimental group children**

(N=50)

<b>Motor skills</b>	<b>Pre testing mean</b>	<b>Post testing mean</b>	<b>Mean differences</b>	<b>Paired t-value</b>
Fine	5.68±1.33	6.66±1.62	0.98	6.32**
Gross	4.38±1.63	5.26±1.66	0.88	8.05**
Perceptual	5.04±1.18	5.88±1.21	0.84	7.76**
Visual	4.98±1.45	5.88±1.45	0.90	8.35**
Total motor skills	20.12±3.84	23.68±4.28	3.56	8.53**

\*\*Significant at  $p < 0.01$

As depicted in Table 4.19, there were significant differences in motor skills development of children at pre and post testing stages. For fine motor skills, post testing mean score ( $M = 6.66$ ) was significantly greater than pre testing mean score ( $M = 5.68$ ),  $t (d.f = 49) = 6.32$ ,  $p < 0.01$ . Similarly, for gross motor and perceptual motor skills, post testing mean scores ( $M_s = 5.26$  and  $5.88$  respectively) were significantly greater than those from pre testing stage ( $M_s = 4.38$  and  $5.04$  respectively),  $t_s (d.f = 49) = 8.05$  and  $7.76$  respectively,  $p_s < 0.01$ . Also for visual motor skills, post testing mean score ( $M = 5.88$ ) was

significantly greater than pre testing, mean score (M = 4.98),  $t$  (d.f = 49) = 8.35,  $p < 0.01$ . Finally, for total motor skills, post testing mean score (M = 23.68) was significantly greater than pre testing mean score (M = 20.12),  $t$  (d.f = 49) = 8.53,  $p < 0.01$ .

These results show that after intervention, experimental group children performed significantly better in different areas (fine, gross, perceptual and visual) of motor development. The significant improvement can be attributed to intervention programme. There results get support from previous literature indicating that after intervention, development of the children can be promoted (Dhanda, 2000; Edwards and Sarwark, 2005; Shanwal, 2006).

**Pre and Post Testing Performance of Control Group Children:** Pre and post testing performance of control group children was also compared with paired t-test. Although intervention was not provided to control group children, however, results indicated significant differences in pre and post testing performance of children.

**Table 4.20 : Pre and post testing paired t-values for motor skills of control group**

(N=50)

Motor skills	Pre testing mean	Post testing mean	Mean differences	Paired t-value
Fine	5.72±1.14	6.00±1.21	0.28	2.71**
Gross	4.36±1.54	4.58±1.51	0.22	2.11*
Perceptual	5.08±1.23	5.34±1.17	0.26	2.22*
Visual	5.04±1.21	5.26±1.41	0.22	2.20*
Total motor skills	20.22±3.76	21.18±4.07	0.96	3.19**

\*Significant at  $p < 0.05$

\*\*Significant at  $p < 0.01$

As presented in Table 4.20, there were significant differences in motor skills development of children at pre and post testing stage. For fine motor skills, post testing mean score ( $M = 6.00$ ) was significantly greater than pre testing mean score ( $M = 5.72$ ),  $t (d.f = 49) = 2.71$ ,  $p < 0.01$ . For gross motor skills, post testing mean score ( $M = 4.58$ ) was significantly greater than pre testing mean score ( $M = 4.36$ ),  $t (d.f = 49) = 2.11$ ,  $p < 0.05$ . Similarly, for perceptual and visual motor skills, post testing mean scores ( $M_s = 5.34$  and  $5.26$  respectively) were significantly greater than those from pre testing stage ( $M_s = 5.08$  and  $5.04$  respectively),  $p_s < 0.05$ . Finally, for total motor skills, post testing mean score ( $M = 21.18$ ) was significantly greater than pre testing mean score ( $M = 20.22$ ),  $t (d.f = 49) = 3.19$ ,  $p < 0.01$ .

These results indicate that at post testing stage, control group children performed better in different areas (fine, gross, perceptual and visual) of motor development. The significant improvement can be attributed to developmental changes with growing age as well as to other factors including availability of opportunities for practice. That control group children performed better at post testing stage also get support from the findings of the Poonam (1999) and Malik (2004).

***Net Gain in Experimental Group Children*** : As presented in Table 4.21 and Fig. 8 in control group, mean gain in fine motor skills was 0.28, mean gain in gross and perceptual motor skills were 0.22

and 0.26 respectively. In experimental group, mean gain in fine motor skills was 0.98, mean gain in gross and perceptual motor skills were 0.88 and 0.84 respectively, mean gain in visual motor was 0.90 and total motor skills was 3.60.

It is clear from the Table 4.21 that gain in different areas of motor skills development was greater in experimental group. Although control group children did not get any intervention but there was a gain in control group, this gain can be a natural gain. Natural gain must have been there in experimental group children also, therefore net gain was calculated for experimental group children by subtracting the gain of control group from that of experimental group. This net gain can be attributed to intervention programme.

**Table 4.21 : Net gain in experimental group children**

(N=50)

<b>Motor skills</b>	<b>Pre testing mean</b>	<b>Post testing mean</b>	<b>Mean differences</b>	<b>Paired t-value</b>
Fine	0.28±0.73	0.98±1.10	0.70	14.1**
Gross	0.22±0.74	0.88±0.77	0.66	19.12**
Perceptual	0.26±0.83	0.84±0.77	0.58	13.22**
Visual	0.22±0.71	0.90±0.76	0.68	21.34**
Total motor skills	0.98±1.65	3.60±1.82	2.62	57.01**

\*\*Significant at  $p < 0.01$

As there was gain in both the groups, therefore, one-way analysis of variance was also run to examine whether there existed significant differences. It is clear from the table that in experimental group gain in

fine, gross, perceptual, visual and total motor skills was significantly higher as compared to gain in control group children. Thus it can be said that invention programme improved different motor skills of experimental group children.

#### 4.5.2 Maternal Involvement at Post Testing Stage :

Maternal involvement at pre and post testing stage was also compared by paired t-test.

***Pre and Post Testing Comparison of Maternal Involvement in Stimulating Motor Skills Activities of Experimental Group :*** As depicted in Table 4.22 and Fig. 6, there were significant differences in maternal involvement in motor skills development of children at pre and post testing stages. For fine motor skills activities, post testing mean score (M = 3.50) was significantly greater than pre testing mean score (M = 2.60),  $t (d.f = 49) = 5.55, p < 0.01$ .

**Table 4.22 : Pre and post testing paired t-value of maternal involvement in stimulating skills activities of experimental group children**

(N=50)

<b>Motor skills</b>	<b>Pre testing mean</b>	<b>Post testing mean</b>	<b>Mean differences</b>	<b>Paired t-value</b>
Fine	2.60±0.93	3.50±0.95	0.90	5.55**
Gross	2.30±1.04	3.06±1.11	0.76	4.34**
Perceptual	1.52±0.89	2.20±1.05	0.68	6.26**
Visual	1.24±0.85	1.94±0.82	0.70	6.73**
Total motor skills	7.66±2.01	10.70±2.21	3.04	9.92**

\*\*Significant at  $p < 0.01$

Similarly, for gross motor and perceptual motor skills activities, post testing mean scores (Ms = 3.06 and 2.20 respectively) were significantly greater than those from pre testing stage (Ms = 2.30 and

1.52 respectively),  $t_s$  (d.f = 49) = 4.34 and 6.26 respectively),  $p_s < 0.01$ . Also for visual motor skills activities, post testing mean score ( $M = 1.94$ ) was significantly greater than pre testing mean score ( $M = 1.24$ ),  $t$  (d.f = 49) = 6.73,  $p < 0.01$ . Finally, for total motor skills activities, post testing mean score ( $M = 10.70$ ) was significantly greater than pre testing mean score ( $M = 7.66$ ),  $t$  (d.f = 49) = 9.92,  $p < 0.01$ .

These results show that after getting involved in intervention programme, mothers of experimental group children performed better at post testing stage. These results get support from the findings of Shanwal (2006). She also found that mothers of experimental group children performed better at post testing stage.

***Pre and Post Testing Comparison of Maternal Involvement in Stimulating Motor Skills Activities of Control Group :*** Pre and post testing involvement of mothers in stimulating motor activities of control group children was also compared with paired  $t$ - test. Although control group mothers were not involved in intervention programme, however, results indicated significant differences in pre and post testing performance of mothers.

As depicted in Table 4.23, there were significant differences in maternal involvement in motor skills development of children at pre and post testing stages. For fine motor skills, post testing mean score ( $M = 2.86$ ) was significantly greater than pre testing mean score ( $M = 2.64$ ),  $t$  (d.f = 49) = 2.20,  $p < 0.05$ . For gross motor skills, post testing mean score ( $M = 2.56$ ) was significantly greater than pre testing mean

score ( $M = 2.32$ ),  $t$  ( $d.f = 49$ ) = 2.20,  $p < 0.05$ . Similarly, for perceptual and visual motor skills, post testing mean scores ( $M_s = 1.76$  and  $1.46$  respectively) were significantly greater than pre testing mean scores ( $M_s = 1.56$  and  $1.26$  respectively),  $t$  ( $d.f = 49$ ) = 1.87 and 1.94 respectively,  $p_s < 0.01$ . Finally, for total motor skills, post testing mean score ( $M = 8.64$ ) was significantly greater than pre testing mean score ( $M = 7.78$ ),  $t$  ( $d.f = 49$ ) = 3.50,  $p < 0.01$ .

**Table 4.23 : Pre and post testing paired t-value of maternal involvement in stimulating motor skills activities of control group**

(N=50)

<b>Motor skills</b>	<b>Pre testing mean</b>	<b>Post testing mean</b>	<b>Mean differences</b>	<b>Paired t-value</b>
Fine	2.64±0.96	2.86±0.93	0.22	2.20*
Gross	2.32±1.02	2.56±1.13	0.24	2.20
Perceptual	1.56±0.97	1.76±0.94	0.20	1.87**
Visual	1.26±0.75	1.46±0.79	0.20	1.94**
Total motor skills	7.78±2.06	8.64±2.36	0.86	3.50**

\*Significant at  $p < 0.05$

\*\*Significant at  $p < 0.01$

These results indicate that at post-testing stages, control group mothers also performed better in stimulating activities for different areas (fine, gross, perceptual and visual) of motor development. The reason for better involvement at post testing stage could be that mothers might have become aware of the different stimulating activities from the questions asked from mothers at pre-testing stage.

**Net Gain in Maternal Involvement of Experimental Group**

**Children :** In control group, mean gain in five motor skills involvement was 0.22, mean gain in gross and perceptual motor skills involvement were 0.24 and 0.20 respectively. Mean gain in visual motor skills involvement was 0.20 and total motor skills was 0.86. In experimental group, mean gain in fine motor skills involvement was 0.90, mean gain in gross and perceptual motor skills involvement were 0.76 and 0.68 respectively. Mean gain in visual and total motor skills were 0.70 and 3.04 respectively. Means and SDs are presented in Table 4.24.

**Table 4.24 : Net gain in Maternal Involvement Stimulating Motor Skills Activities of experimental group children**

(N=50)

<b>Areas of motor skills activities involvement</b>	<b>Gain in control group</b>	<b>Gain in experimental group</b>	<b>Net gain in experimental group</b>
Fine	0.22	0.90	0.68
Gross	0.24	0.76	0.52
Perceptual	0.20	0.68	0.48
Visual	0.20	0.70	0.50
Total motor skills	0.86	3.04	2.18

As maternal involvement in control and experimental group improved at post testing stage, therefore net gain in maternal involvement was calculated for experimental group children. This net gain can be attributed to the involvement of mothers in providing intervention programme to their children. Similar result have been obtained by Shanwal (2006).

**Level of maternal involvement at post testing stage :** Table 4.25 depicts the level of maternal involvement in motor skill activities of experimental group children at pre and post testing stage. At post testing stage in fine motor skills activities, 54.00 per cent mothers had high level of involvement and 44.00 per cent had medium level of involvement. In gross motor skills activities, majority of mothers (62.00%) had medium level of involvement and 32.00 per cent mothers had high level of involvement. In perceptual motor skills 38.00 per cent mothers had high level of involvement, 34.00 per cent mothers had low level of involvement and 28.00 per cent mothers had medium level of involvement. In visual motor skills, 46.00 per cent mothers had medium, 28.00 per cent had low and 26.00 had high involvement level. Finally, taken together in total motor skills activities 64.00 per cent mothers had high, 34.00 per cent mothers had medium and only 2.00 per cent mothers had low level of involvement.

**Table 4.25 : Level of maternal involvement in motor skills activities of experimental group children at pre and post testing stage**

(N=100)

<b>Motor skills</b>	<b>Pre testing (N=50)</b>	<b>Post testing (N=50)</b>
<b>Fine</b>		
Low	6	18
Medium	35	22
High	9	27
<b>Gross</b>		
Low	8	3
Medium	37	31
High	5	16
<b>Perceptual</b>		
Low	23	17

Medium	21	14
High	6	19
<b>Visual</b>		
Low	29	14
Medium	19	23
High	2	13
<b>Total motor skills</b>		
Low	17	1
Medium	30	17
High	3	32

It can be concluded from these results that level of maternal involvement in different motor skills activities improved at post testing stage. This can be attributed to their involvement in providing intervention to their children.

## **CHAPTER - V**

# *Summary and Conclusions*

The present study was undertaken with the following objectives :

1. To assess the existing status of motor skills of 3-4 years old rural children.
2. To assess the maternal involvement in stimulation of motor skills of their 3-4 years old children.
3. To develop, implement and assess the impact of stimulating program me on motor skills of 3-4 years old rural children.

Hisar district of Haryana state was selected purposively. From Hisar district one block was selected randomly and from the selected block, list of villages were prepared having atleast 4 anganwadies in each village to meet the requirement of the sample size. From this list, 2 villages were selected randomly (namely Kaimri and Mangali). From both the villages, list of children who were attending anganwadies in the age group of 3-4 years was prepared separately. From each list, 100 children were selected randomly. Mothers of these children were also included in the study. Children from Kaimri village were taken as control group and from Mangali as experimental group.

The dependent variables constituted gross, fine, perceptual and visual motor skills. The independent variables were personal and socio-economic variables (sex, birth order, caste, parental education, parental occupation, family size, type of family and annual income). Maternal involvement in stimulating activities was taken as independent as well as dependent variable. The statistical tools used to analyze the data were frequency distribution, one-way analysis of variance, paired t-test and correlation co-efficient. The important results emerged from the present study are as follows :

**Socio-personal and economic profile of respondents :**

In Kaimri and Mangali villages, majority of children were male. In Kaimri village, 47 children were third born and in Mangali village, 46 children were second born. Regarding age group, in Kaimri and Mangali villages 65 and 55 children were in 3½+ to 4 years age group respectively. With regard to occupation of fathers, from both the village, 63 and 64 fathers belonged to labour class respectively. Regarding occupation of mothers, in Kaimri, 53 were housewives and in Mangali, 70 mothers were housewives. Regarding education of father in Kaimri and Mangali villages 40 and 47 were matriculate. Sixty nine mothers from Kaimri and 71 mothers from Mangali were illiterate.

With regard to family saize, in Kaimri, 54 children belonged to medium size families and in Mangali, 44 children belonged to large families. In Kaimri, 63 children belonged to nuclear families and in Mangali, 51 children were from nuclear families. With regard to caste in

Kaimri 63 children were from general class and in Mangali, 58 children were from SC class. Regarding income, 57 families from Kaimri and 61 families from Mangali were from low income group. Similar, trend of socio-personal and economic profile was observed in control and experimental groups.

### **Assessment of existing status of motor skills of children**

From total sample, village wise there were no significant differences in existing status of motor skills of 3-4 years old rural children. From total sample it was found that there were no significant differences in existing status of motor skills of 3-4 years old boys and girls. Age group wise results indicated that there were significant differences in existing status of motor skills of two age groups (3-3½ years and 3½<sup>+</sup>-4 years). Mean scores of older age group (3½<sup>+</sup>-4 years) were significantly greater than those from younger age group (3-3½ years) for fine, gross, perceptual, visual and total motor skills. Similar results were obtained for control and experimental groups.

### **Assessment of maternal involvement in stimulation of motor skills of their children**

Results clearly indicated that there were no significant differences in maternal involvement in stimulating activities for motor skills of their children in both the villages as well as in control and experimental groups.

There were no significant differences in maternal involvement in stimulating activities for motor skills of boys and girls in both the

villages as well as in control and experimental groups. Also there were no significant differences in maternal involvement in stimulating activities for motor skills of two age groups.

### **Level of maternal involvement in stimulating motor skills activities of children**

Results indicated that maternal involvement in different motor skills activities was medium to low in both the villages, as well as in control and experimental groups.

### **Correlation between maternal involvement and motor skills development of children**

In total sample, as well as in control and experimental groups, results indicated that maternal involvement in motor skills activities was positively correlated with motor skills development of children. Higher the maternal involvement in different motor skills activities better were the different motor skills development of children.

### **Impact of stimulating programme on motor skills development of children**

Results showed that after stimulating programme, experimental group children performed significantly better in different areas (fine, gross, perceptual and visual) of motor skills development. The significant improvement can be attributed to stimulating programme. At post testing stage, in control group also children performed better in different areas (fine, gross, perceptual and visual) of motor skills

development. The significant improvement can be attributed to developmental changes with growing age as well as to other factors.

Gain experimental group was significantly higher as compared to gain in control group children. As there was gain in experimental and control group children, therefore net gain in experimental group children was calculated. That net gain was the impact of stimulating programme.

### **Maternal involvement at post testing stage**

Mothers of experimental and control group children performed better at post testing stage. As maternal involvement in control and experimental group improved at post-testing stage, therefore net gain in maternal involvement was calculated for experimental group children. This net gain can be attributed to the involvement of mothers in providing stimulating programme to their children. Level of maternal involvement improved significantly in experimental group after stimulating programme was implemented by involving them.

### **SUGGESTIONS**

1. The time of stimulating programme may be increased.
2. The mothers of the children may be encouraged for high degree of involvement in different activities.
3. On regular basis, an integrated educational programme may be conducted for the parents of the children.

4. Child's curiosity should be satisfied with reasonable and appropriate methods.

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## ANNEXURE-I

### Questionnaire for background information

1.	Name		
2.	Age		
3.	Sex		
4.	Address		
5.	Date of birth		
6.	Birth order		
7.	Number of siblings		
8.	Father's occupation		
9.	Mother's occupation		
10.	Father's education		
11.	Mother's education		
12.	Family income		
13.	Family type		
14.	Family size		
15.	Caste		
16.	Land holding		
17.	Type of size of house		

## ANNEXURE-II

### Observation checklist for the assessment of motor skills of 3-4 years old children

Sr. No.	Gross motor skills	Yes	No
1.	Walk on tip toe up the length of a measuring tape.		
2.	Stand up from the lien position on his/her back without support.		
3.	Walk up stairs on alternate feet.		
4.	Stop from a full run in a controlled fashion.		
5.	Stand alone on left foot without any support.		
6.	Stand alone right foot without any support.		
7.	Jump over rope (2 inches above the floor) without touching it.		
8.	Hop on one foot for 2-3 feet length.		
9.	Walk down stairs on alternate feet.		
10.	Jump a distance of 24 inches.		
11.	Imitate posture.		
12.	Walk forward on line.		
13.	Walk backward on line.		

Sr. No.	Fine motor skills	Yes	No
1.	Put 3-4 beads in the string.		
2.	Grasp pencil at the nearest end.		
3.	Imitate hand movement.		
4.	Handle pencil in hand for making on the paper.		
5.	Copy a circle.		
6.	Button at least one button.		
7.	Copy plus sign.		
8.	Copy a square.		
9.	Manipulate clay material.		
10.	Put 20 pellets in bottle in 60 sec.		
11.	Zip and unzip.		
12.	Pour beads in a thread		
13.	Shift toy from one hand to another		
14.	Brush the teeth.		
15.	Scribble with crayon or pencil.		

Sr. No.	Perceptual motor skills	Yes	No
1.	Match four colours.		
2.	Build train of match boxes.		
3.	Imitate vertical and horizontal strokes.		
4.	Discriminate geometry forms (triangle and square).		
5.	Discriminate a given picture.		
6.	Compare sizes (big and small).		
7.	Build a bridge from 3 blocks.		
8.	Build a wall of 6 blocks.		
9.	Name any 4 colours.		
10.	Understand concept of more.		
11.	Identify incomplete picture.		
12.	Find most direct rout on the map.		
13.	Build a T.		
14.	Discriminate weight (heavy & light)		

## ANNEXURE-IV

### Questionnaire cum interview schedule for maternal involvement in stimulation of motor skills of 3-4 years old rural children

Sr. No.	Statements	Yes	No
<b>A)</b>	<b>Gross motor skills</b>		
1.	Encourage the child to walk up and own stairs.		
2.	Encourage the child to jump (Ex. One stairs).		
3.	Encourage the child to walk on tip toe.		
4.	Ask the child to stand alone on one foot (right and left) without any support.		
5.	Motivates the child to walk forward or backward.		
6.	Encourage the child of jump over rope.		
7.	Encourage the child to hop on one foot.		
8.	Motivates the child to stop while running.		
9.	Encourage child to pedal a tricycle.		
10.	Encourage child to swim simple strokes.		
<b>B)</b>	<b>Fine motor skills</b>		
1.	Provide activities which requires fine motor skills like put beads in a string, put pellets in bottle.		
2.	Encourage the child to grasp pencil at the nearest end.		
3.	Encourage the child to handle pencil in hand.		
4.	Motivate child to manipulate clay material.		
5.	Motivate the child to copy different designs like circle, square, plus sign etc.		
6.	Provide ample opportunities for improving self help skills : (a) buttoning, (b) zipping, (c) dressing (d) brushing, (e) combing		
7.	Encourage the child to make pieces of chapti while eating		
<b>C)</b>	<b>Visual motor skills</b>		

Sr.	Statements	Yes	No
1.	Encourage child to toss a ring.		
2.	Encourage child to draw lines (vertical and horizontal)		
3.	Encourage child to draw triangle, square, rectangle),		
4.	Provide opportunities for creative/art activities like painting, drawing .		
5.	Provide activities like sorting, pouring, beading etc.		
<b>D)</b>	<b>Perceptual motor skills</b>		
1.	Encourage child to identify different colours.		
2.	Involve the child in discrimination of different feature of objects (e.g. weight, forms, shapes, colours)		
3.	Provide facilities for eye hand co-ordination (block building puzzles)		
4.	Encourage the child to identify incomplete picture.		
5.	Encourage the child to identify parts of the body.		

# Abstract

<b>Title of Thesis</b>	:	<b>Stimulating programme for delayed motor skills of 3-4 years old rural children</b>
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<b>Year of Award of degree</b>	:	2006
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<b>No. of words</b>	:	Approx. 260
<b>Key words</b>	:	Fine, gross, perceptual and visual motor skills, stimulation, maternal involvement, VMI (visual motor integration)

The present study was conducted in Hisar-1 block of district Hisar. From Hisar-1 block, two villages i.e., Kaimri and Mangali were selected at random. One hundred children in the age range of 3-4 years were selected randomly through aganwadies from each village. Selected children were assessed for their motor skills development with the help of observation checklist and Berry's Development Test of Visual Motor Integration (VMI) (1989). Maternal involvement in stimulation of motor skills of the children were assessed through a self prepared questionnaire-cum-interview schedule.

On the basis of assessment at pre-testing stage, fifty children each from the two villages with lowest scores were identified as below average children. These children were operationally defined as children with delayed motor skills. Children from Kaimri village acted as control group children and children from Mangali village acted as

experimental group children. Mothers of these children were also interviewed to assess the involvement level in motor skills development activities of their children.

Stimulating programme was provided to experimental group children by involving their mothers for a period of one month on alternate days. Post-testing of children and mothers was done after a gap of one month to examine the impact of stimulating programme. After implementation of stimulating programme there was significant increase in scores of experimental group children. These results clearly indicated the impact of stimulating activity programme on experimental group children. Stimulating programme improved the motor skills of these children. Gain in scores of experimental group children were significantly higher than those of control group children. Maternal involvement in motor skills development activities also improved significantly in experimental groups.

**MAJOR ADVISOR**

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