

Kinesthetic integration

The child should be able to:

- (a) Integrate movements of two or more differentiated parts of the body.

Experiences

The teacher can set the following tasks:

1. (a) Balance a beanbag on as many different parts of the body as you can, saying what you are balancing it on.
(b) Now move while balancing it.
(c) Can you sit down and stand up with your beanbag balanced?
2. Put your yarn ball on the floor.
(a) Touch it with as many different parts of your body as you can (free exploration of responses, then make suggestions if needed, such as forehead, nose, shoulder, etc.)
(b) Push the yarn ball away from you with some part of the body, then jump over it—push it with a different part.
3. (a) Make two parts of your body touch—elbow to elbow, head to knee, toe to nose, etc.

Body Awareness

Possible Movements of Body Parts (anatomically defined)

The movement of various parts of the body (gesture) is limited by the structure of those parts and their interconnections. The flexion and extension of limbs is limited at the joints, and only a few joints are structured for rotation to take place. Children should be aware both kinesthetically and cognitively of what the possible movements are in order to both make full use of those possibilities, and to achieve greater volitional control of them.

Rather than use the terms flexion, extension and rotation when working with small children, the more general terms of bend, stretch and twist or turn will be more readily understood and achieve the same desired effect.

(For those joints where circumduction is possible the concept of "circling" the arm and the leg will utilize that range of movement. This concept will be introduced later.)

Content Objectives

The child should know:

- (a) Which parts of the body can bend and stretch and which can twist.
- (b) Most joints can only bend in one direction and some can bend in more than one direction.
- (c) In order to twist one part on another, one part must remain fixed.
- (d) The arms and legs can stretch in different directions and at different levels.
- (e) The body can hold different stretched, curled and twisted positions which make an infinite variety of stretched, twisted and curled shapes.
- (f) How far you bend a limb, or the body, determines whether it makes a curve or an angle.

Process Objectives

The child should be able to:

Kinesthetic Differentiation

- (a) Differentiate the movements of flexion, extension and rotation.
- (b) Differentiate rotation of certain joints.
- (c) Refine movements of stretching, curling and twisting.
- (d) Repeat precisely movements of stretch, curl or twist.

Kinesthetic Integration

- (e) Integrate stretched, curled and twisted positions into a sequence.

- (f) Integrate stretching, curling or twisting with running and jumping into a variety of patterns.
- (g) Remember a sequence or order of stretched and curled positions or movements and repeat them.

Classification

- (h) Identify and classify movements and body positions as stretching, curling, twisting.

Interactions (Learning Experiences)

1. (a) Make all parts of your body stretch as far away from you as you can--on the beat of the tambour stretch them a different way--at each beat change the stretched shape--stretch in different directions--at different levels.
- (b) This time curl all your body into a tight ball--at each beat of tambour stretch one part out, then another and another until your whole body is stretched.
- (c) This time at each beat curl one part in towards you, then another, and another.
- (d) This time stretch out each part that I call--and only that part, keep the rest bent.
- (e) Repeat this, bending each part called in turn.
2. (a) Show how you can twist one part of the body, can you twist another--keep twisting different parts.
- (b) Keeping your feet still, twist your body--above your hips.
- (c) How can you keep your trunk still and twist your hips?
- (d) With hands and feet on the ground can you twist to change position?
3. (a) Join together a stretch, followed by a curl, and remember each of the shapes. Keep repeating them moving from one to another. Now add a twisted shape. Now repeat all three.

- (b) Teach your sequence to a partner and both do it together.
- 4. (a) Run and jump high in the air. This time make a stretched shape in the air. Keep making different stretched shapes on each jump.
 - (b) Choose a shape you like making in the air. Practice it while standing--now put it back into the jump and demonstrate it clearly.
 - (c) Do the same thing with a twist or curl. (Remember to keep head up even if curling--or child will land on nose).
- 5. (a) Work with a partner stretching and curling but do the opposite of what your partner does.

Posture or Body Shape

The human body whether moving or still always exhibits a particular posture or shape. This posture can be continually changing as in a posture or shape. This posture can be continually changing as in a movement sequence or can be static as in maintenance of a balanced position or in shape that is held, i.e., in the air during elevation. These body shapes can be broadly categorized as stretched, curved or twisted and various postures can be analyzed in terms of these dimensions.

When movement tasks are set that require children to focus on and experiment with various aspects of body shape they can become consciously aware of the type of shape being called for in any particular activity. This conscious awareness will involve having an understanding of differences between stretched, curved and twisted shapes as well as an ability to differentiate and clearly articulate in movement the differences between each, for example, a fully stretched arm and a curved arm. When demands for various shapes and changes of shape are combined with the actions of locomotion, balance and elevation the richness of the movement vocabulary can be greatly expanded and the difficulty of a task can be increased. Also the range of movement control will grow when tasks take a child into new and less familiar postures which require him to move in unusual and interesting ways.

Content Objectives

The child should know:

- (a) The body always has a shape or posture whether it is moving or still.
- (b) The body can have different shapes or postures that are variations of stretched, curved, angular and twisted positions.
- (c) The amount of space a body fills is related to the shape and position of the body.
- (d) Movement is a continuous change from one shape to another.
- (e) The body shape can change with different speeds or different forces and either smoothly or abruptly.
- (f) Posture can be maintained with varying spatial orientation.
- (g) The body shape can be symmetrical or asymmetrical.

Process Objectives

The child should be able to:

Kinesthetic Differentiation

- (a) Differentiate body postures that are stretched and narrow, stretched and wide, curved or twisted.
- (b) Differentiate the various kinds of movement that result when the body assumes different positions.
- (c) Differentiate when both sides of the body match (symmetry) or are different (asymmetry).

Kinesthetic Integration

- (d) Integrate simple stretched, curved or twisted shapes of parts of the body into a more complex body shape.
- (e) Integrate several shapes into a movement sequence.
- (f) Integrate a particular posture with a particular type of action, e.g., running and twisting.

Kinesthetic Generalization

- (g) Generalize one body posture to a number of different possible ways of moving and to different spatial orientations.

Visual Discrimination (Perception)

- (h) Discriminate between lines and shapes that are straight, curved, angled or twisted.

Classification

- (i) Classify different body shapes according to their relative degrees of being stretched, curved or twisted.

Interactions (Learning Experiences)

1. Stretch out as tall as you can, really stretched. Try stretching in a different direction and another. At each beat of the tambour make another different stretched position. Find a partner and see how many shapes you can make together.
2. See what other shapes you can make with your body besides stretched. Have you tried twisting and curling? What happens when you bend at all possible joints--what kind of shape does that make? (angular)
3. Make a stretched shape where both sides of the body match--and another; keep making matching shapes. Now make a shape where each side of the body is different. (Explain symmetry and asymmetry). Try one side stretched the other curled, or stretched and twisted.
4. Lying on the floor, keep the shoulders in contact with the floor and twist your hips right over until your shoulders have to follow --keep doing it. Now keep your hips in contact with the floor and twist your shoulders until you roll. Try doing this to each side and alternate hip twist and shoulder twist. Find some other ways of moving with a twist.
5. With hands and knees on the floor reach under the body with one hand until you twist so far you have to roll over. Find other ways of making your body twist from that position until you go off-balance.
6. Move around the room changing your body shape from stretched, to curled and to twisted and see what kinds of movements you

make. Can you stretch and curl in different ways-different directions? Try each stretching action slowly and each curl very fast.

7. Make one kind of shape, see how many ways you can keep the same body shape but be in a different position on the floor.
8. Take a partner and run straight towards him only avoiding him at the last minute by twisting your shoulders. See how closely you can make your bodies pass without touching.

Balance or Support of Body Weight

Whenever the body is in contact with a supporting surface the body's balance in relation to gravity is of crucial importance. When lying completely on the floor the body is quite stable, but as weight begins to be supported on fewer and fewer parts of the body and over a smaller and smaller area, controlling the body's relationship to gravity becomes increasingly difficult. In order to achieve greater degrees of psychomotor competence the individual must become better able to control his balance in a wide variety of body positions and actions.

Gravity exerts a force on the body in such a way that the main pull is along a line passing through the center of the body mass. For the body to maintain balance the center of gravity must be directly over the base of body support, and the body is most stable when it falls directly over the center of that base. When this base is very wide a large number of postures can be assumed without the center of gravity falling outside the support area, but as the base becomes smaller the center of weight must be more carefully placed if balance is to be maintained. When any movement occurs the center of gravity must be counterbalanced by a movement in the opposite direction. As an individual becomes more aware of where the center of gravity is in relation to his base of support he can adjust his position to move on or off-balance, gradually increasing his ability to gain and maintain a balanced position.

By providing many types of experiences with supporting weight on different parts of the body the idea of balance can be introduced. Children can begin to become conscious of the ways in which their bodies respond to the pull of gravity and of what kinds of movements will take them off balance. In addition, the aspect of balance which involves moving continually on and off balance while transferring weight (dynamic balance) can become a focus in movement tasks. This dynamic balance calls for rapid change of the base of support from one body part to another.

Content Objectives

The child should know:

- (a) Gravity is a force pulling downward on the body constantly.
- (b) To maintain balance the body weight must be over the parts of the body that are supporting the weight (base of support).
- (c) The most stable position is when the center of gravity is directly over the center of the base of support.
- (d) The lower the center of gravity is in relation to the base of support, the easier it is to maintain balance.
- (e) The larger the base of support, the easier it is to balance.
- (f) Any movement of the body shifts the center of gravity in the direction of that movement.
- (g) To maintain balance, a shift in the center of gravity must be counterbalanced by a movement in the direction directly opposite to the shift.
- (h) Transferring weight calls for continually moving on and off balance in a controlled and directed fashion.
- (i) When taking the weight on the hands, the base of support must be strong with arms and hands directly under the shoulders. In order to balance on the hands, the shoulders, hips and legs must be in line with the center of gravity or the body will go off-balance.
- (j) A safety factor whenever taking the weight on the hands is to be sure to look at a point on the floor ahead of one's hands so that the head counterbalances the tendency of the legs to go over.

Process Objectives

The child should be able to:

- (a) Differentiate between the feeling of off-balance and on-balance.

- (b) Differentiate many ways to support the weight of the body and the parts of the body that are capable of supporting weight alone or in various combinations.
- (c) Differentiate the directions of various shifts in the center of gravity resulting from a change of body position (movement).
- (d) Differentiate movements that will increase stability, e.g., lowering the center of gravity, widening the base of support, counter-balancing a shift in the center of gravity.

Kinesthetic Integration

- (e) Integrate support from different parts of the body into a stable base of support.
- (f) Integrate several balanced positions into a controlled sequence of movement and balance.
- (g) Integrate actions of going on and off-balance into a smooth and continuous movement pattern.

Kinesthetic Generalization

- (h) Generalize the feeling of being on balance to many different positions and to positions that have increasingly smaller bases of support.
- (i) Generalize a pattern of moving on and off-balance (e.g., fall-roll-recover) to a number of different postures and types of movement.

Prediction (Cognition)

- (j) Predict the direction of going off-balance when a particular movement is called for or when the base of support is altered.

Analogy (Cognition)

- (k) Relate the action of everyday objects in relation to gravity to the processes involved in balancing the body on its base of support.

Concept Generalization (Cognition)

- (1) Generalize the concepts of gravity, center of gravity and base of support to the actions of the body in relation to gravity.

Interactions (Learning Experiences)

1. Run anywhere and on the signal freeze in a balanced position. Try not to move a muscle. Each time you stop find a different part of the body to balance on--knees, seat, feet, shoulders, elbows and knees, etc.--but really balance, no wobbling at all, this means to be firm.
2. In your own space, try balancing on one part of the body--a different one, and another one part. Make that two parts; a different two--four, etc.
3. Put both your hands and feet on the floor and see how many different body shapes you can make while your hands remain fixed. Now spread your hands and feet wide--narrow, far apart--as close together as you can. Are you firmer when they are apart, or close--could I push you over when they are close together?
4. Try balancing on just your knees and feet, how far can you lean without falling over--experiment. Let your weight go too far and catch yourself by putting another part of the body on the floor. What happens if you lean and take one knee off the floor to stretch that leg away from where you are leaning--are you still as likely to fall? (Explain counterbalance). Try this standing, but be ready to collapse or move your feet if you lean too far.
5. Balance with your weight on your shoulders and with your feet in the air. How many different shapes can you make your legs while they are there? Find a partner and lie side by side then balance on your shoulders. With one leading and the other following, match the shapes that your partner makes with his legs.
6. Try taking all your weight on your hands--can you find several ways of doing this?
7. This time try to get your hips over your arms and shoulders. (Remember to keep looking out in front of your hands.) How high up can you kick your feet? Can you balance up there?

- 8 Move along the balance beam. Each time you go face a different direction. Have you tried moving at a different level? Try using hands and feet.
9. (Move two beams side by side at different levels) Try moving along the beams going from one to another. Repeat facing a different way.

Locomotion or Transference of Body Weight (while moving from one place to another)

The basic skill of transferring the body weight from one part of the body to another while changing location is fundamental to the development of many more complex movement skills and should be introduced as soon as possible in the curriculum. Most of the fundamental locomotor skills such as walking, running, hopping, jumping are well established with many children by the time they reach kindergarten, but much refinement needs to take place for real efficiency and control. These specific skills, however, are not only the means of traveling and children should explore and learn to manage the many different ways that it is possible to transfer their weight to move from one place to another.

The possible ways of transferring weight as a means of traveling can be categorized under the following headings:

1. Step-like actions.
2. Rocking and rolling actions.
3. Sliding or slithering.

Content and process objectives for this general introduction to locomotion will be presented under the separate sections as given. Some initial experiences would include the following:

Experiences

1. Move anywhere you like finding different ways of moving. Try high, now low, close to the floor.
2. Find different parts of your body to move onto as you go—have you used your hands and feet, seat, shoulders, etc.? (Look for examples of movement falling into the step-like, rolling and sliding categories and identifying them--focus on one or the other in successive experiences).

I. Step-like Actions

Transference of weight in locomotion can (in fact most often does as in walking), take place by using parts of the body which are not immediately adjacent, that is leaving out parts in between, leaving a space between where parts meet the floor, and implying a time lag between one part and the other part taking the weight. In running, the weight is shifted alternately from one foot to the other; in creeping, the shift is from hands to feet, but it could just as well be shoulder to feet, or feet to knees or seat. The concept is that of stepping from one part of the body to another.

To gain increasing control of movement and greater conscious awareness of what the body can do, children should explore and experiment with stepping from one part of the body to another. In doing this they may use combinations of parts, varying distance and speed of the step-like actions, consciously determining the part to be moved onto and the most efficient way of shifting weight from one part to another.

Because running is so essential in many of the activities children and adult engage in, special attention should be given to gaining confidence of all aspects of that fundamental locomotor skill. Likewise, the development of other skills from the walking and running skills such as skipping, galloping and sliding need to be refined, and so a focus on those skills is necessary also.

Content Objectives

The child should know:

- (a) A step-like transfer of weight means using parts of the body not immediately next to each other.
- (b) The various parts of the body, and ways it is possible to transfer weight from and to these various parts in step-like actions.
- (c) Great care must be taken in how some parts of the body may take the weight (the head, for example).
- (d) Increasing the length of the step and/or the speed in executing it requires more effort and greater control.
- (e) Legs are easier to take weight than hands because they are stronger.
- (f) Parts can be used singly to take weight or in combination with other parts.

Process Objectives

The child should be able to:

Kinesthetic Differentiation

- (a) Differentiate step-like actions from non-stepping actions.
- (b) Differentiate parts of the body which can take weight from those which cannot.
- (c) Differentiate non-adjacent from adjacent parts of the body.

Kinesthetic Integration

- (d) Integrate movement of the body from one part to another so that balance and control are evidenced.
- (e) Integrate movements of several parts of the body which may combine to take the weight.

Cognitive Generalization

- (f) Generalize the notion of stepping (usually relating to walking, running, etc.) to a much broader concept of transferring weight from any part of the body to another in locomotion.

Classification

- (g) Classify parts of the body as adjacent or non-adjacent resulting in ability to produce step-like actions.

Interactions (Learning Experiences)

1. Run anywhere using your feet for travelling. Try using your feet in as many different ways as you can, close together—now far apart. Make your steps big and strong, now very small and light. Do they always have to move forwards? How many different ways can they go?
2. This time use your feet to make you twist and turn as you go. Can you use different parts of your feet to step onto? See how many parts you can find.
3. Moving around the room, try to take your weight onto a different part of your body to travel and keep changing

parts. See how you might use very unusual ways of stepping from one part to another. Step carefully, taking the weight gently. Now move fast from one part to another. Are you changing directions as you go?

4. Move around the room on your hands and feet only. Make them move in as many different ways and as many different directions as you can. Try very slowly and now speed it up until you are moving very fast.
5. On your hands and feet try moving so that first your hands go, and then your feet follow. Keep changing what you are doing but keep the hands first, feet to follow. Now try moving hands and feet alternately, can they cross over sideways? Can the feet move right past the hands on a step?
6. Working with hands and feet on the floor try taking one part off the floor and holding it high, but keep moving--Can you move on hands and feet but sometimes get both feet high in the air as you go? This time work on getting your tummy to face the sky as you go. Sometimes make it face the sky and sometimes the floor--keep doing that alternately--moving in different directions.
7. (If you have climbing frames) Try stepping in different ways from one bar to another. Can you move feet first and then hands--now the other way, hands then feet? Try using another part of your body to take the weight as you step on the bars--your knee, seat.

These are a mere ripple in an ocean of ideas that can be generated concerning moving in different ways with step-like actions--much time can and should be spent experimenting with ways of traveling.

II. Rocking and Rolling Actions

When the transference of body weight is made from one part of the body to the next immediately adjacent part in a smooth, continuous, consecutive sequence a rocking or rolling action of the body results, moving it from one place to another. When doing this there should be no gaps between the parts of the body taking the weight.

This can be achieved by using those parts of the body which are anatomically adjacent, as in lying on one's back and rolling sideways like a log (likened to rolling a cylinder along the floor). There is also the possibility of sitting on the floor, gently taking the weight gradually from the lower back to the shoulders, resulting in a rocking action. It can

be seen, however, that possibilities are limited when only using parts that are naturally next to each other.

To extend the possibilities of rolling as a means of locomotion, parts of the body which normally do not lie adjacent to each other can be made to do so by putting them next to each other to become immediately adjacent. In this way, having grasped the concept of "roundness" as being crucial to the action of rolling, a child can curl up into a ball-like shape and roll in many directions taking the weight of the body on the parts which are now immediately adjacent, both naturally adjacent and placed next to each other. For example, when rolling backwards the child will shift the weight from the seat along the back to the shoulders, to head and hands, and to the knees or feet then placed on the mat next to the head, and then back to the seat to continue the sequence.

Because the rolling action is such a safe way of absorbing the force of the weight of the body when falling or landing in an off-balance position it is a crucial aspect of psychomotor competence from a safety point of view. Rolling actions in different directions, at different speeds, landing on different parts and from varying heights should be gradually developed after careful introduction at floor level.

Points to remember in rolling are to round out the spine, tuck in heads and elbows and stay curled tightly throughout the rolling action. Momentum is necessary but needs to be controlled.

Content Objectives

The child should know:

- (a) A rocking or rolling transfer of weight means using parts of the body that are immediately adjacent or that can be placed next to each other to become immediately adjacent.
- (b) Rolling can occur with the body extended (cylindrical rolling) or with the body rounded (spherical rolling).
- (c) Rolling is a safe way to absorb force when falling or landing in an off-balance position.
- (d) For safe rolling the body should be rounded with head and elbows tucked in.
- (e) Rolling can occur at different speeds and in different directions.

- (f) Different parts of the body can lead in to the roll.
- (g) It is necessary to have enough momentum to begin a rolling action but the momentum must be controlled for smooth and safe performance.
- (h) To roll backwards most efficiently, hands can help take the weight off the head and in so doing should be placed near the shoulders with thumbs towards the ears and fingers towards the shoulders, pushing strongly at the elbows and wrists.

Process Objectives

The child should be able to:

Kinesthetic Differentiation

- (a) Differentiate parts of the body that are adjacent or that can be placed adjacently.
- (b) Differentiate rolling or rocking actions from other forms of transferring weight.
- (c) Differentiate round, curved and straight positions of the body.
- (d) Differentiate parts of the body that can safely lead into a roll.

Kinesthetic Integration

- (e) Integrate use of successive body parts into a smooth continuous action.
- (f) Integrate various patterns of rocking and rolling into a continuous sequence.

Kinesthetic Generalization

- (g) Generalize the ability to control momentum through rolling to all situations in which it is necessary to absorb force from going off balance.
- (h) Generalize any rolling pattern to many different speeds and directions of rolling.

Attribute Identification (Cognition)

- (i) Identify spherical and cylindrical shapes as having attributes that make rolling possible.

Analogy (Cognition)

- (j) Relate attributes of shapes that can be rolled to possible actions and shapes of the body.

Interactions (Learning Experiences)

1. Lie flat on the floor--keeping your body as straight as you can, try to move by rolling first one way and then another. Can you go fast--slowly? Try to make it very slow and stop whenever you hear the signal.
2. Start rolling sideways again but this time change the shape of your body as you roll to a tight curled shape and continue rolling. Try changing shape from stretched to curled and back again as you roll.
3. Sit clasping your knees close to your chest and very gently and smoothly rock back so that you are resting only on your shoulders in a tight little ball. Gently rock backwards and forwards making your back as round as you can.

Can you find other ways and other directions to rock? Try with your body stretched out, can you make a long curve to rock on? Keep changing from a stretched rocking action to a curled one.

4. Start rocking in a curled position and gradually make your rocking action bigger and faster until it takes you all the way over into a rolling action. Keep rolling, trying to roll as smoothly as you can in as many different directions as you can find.
5. With mats, try rolling around the edge without swivelling your body around at all (combine forwards, sideways, backwards and sideways rolls around edge). Two work at the same time, starting in opposite corners.
6. Using mats scattered around room--move freely between mats, gently running, and roll on the mats as you come to them, watching for spaces. Vary the direction and speed of the roll. Work for a smooth roll from the run and an easy rise,

pushing on the feet to get back into the run.

7. Try jumping from low benches, or boxes, to land and roll. Be sure to give gently into a tight curl to roll, controlling the momentum.
8. Stand by your mat and let different parts of your body lead into the roll. Touch the mat with that particular part first (elbow and upper arm, shoulder, seat, knee and thigh, etc. are possibilities).
9. Balance on one part of your body then gradually let yourself tip off-balance into a roll. Try this form from many different balanced positions.

These experiences can be extended by combining rolls, combining running, jumping and rolling, working in groups of two or more and any of the other means of developing progression elaborated upon earlier.

III. Sliding and Slithering

In any full consideration of the possible ways of moving the body from one place to another, the act of sliding along the floor cannot be omitted, particularly when such a technique is a part of the American baseball scene. Given a slippery surface, suitable clothing, sufficient momentum and the initial courage to try, children thoroughly enjoy letting their feet slide out from under them to take their weight on some other part of the body which then remains in contact with the floor while locomotion continues. This mode of locomotion is unlike the previously described actions because the weight is not transferred when once the slide has started, the weight remains on the same part of the body as it moves from one place to another.

However, an adaptation of sliding, identified here as slithering, combines the principle of sliding, i.e., one part remaining in contrast with the supporting surface--while another part of the body provides the momentum, such as lying on the back pushing with the feet while the back remains in contact with the floor to slither from one place to another. Pulling oneself along on one's elbows while lying on one's front is another example.

Children can explore sliding and slithering as forms of locomotion, discovering what parts of the body can satisfactorily take the weight for sliding, and what parts of the body can push or pull the remainder of the weight along the ground as in slithering.

Since experiences introducing these actions are necessarily somewhat

limited by the very nature of the movements, the teacher can establish his own objectives and experiences where suitable opportunities arise for this mode of locomotion.

Elevation and Receipt of Body Weight

One exhilarating capability of the human body is the capacity to project itself into the air and sustain, even if only momentarily, the sensation of flight. In achieving this the body is propelled by pushing off one or two parts of the body and then receiving the weight again on one or more parts of the body.

The most obvious means of this explosive propulsion are the legs, which can be used in several different ways and combinations. These combinations of jumping and landing on the feet provide five basic jumps which may be used in any sequence or pattern to provide a wide variety of rhythmic, hops, leaps and jumps. The five basic jumps include pushing off:

1. one foot to land on the same foot (hop)
2. one foot to land on the other foot (leap)
3. one foot to land on two feet
4. two feet to land on one foot
5. two feet to land on two feet

Variety is introduced through changes of direction and speed, and through standing or running take-offs.

As well as jumping to land on the feet, the weight can be received on the arms as in dive rolls, catsprings, and handsprings. When jumping onto a bar or rope the weight is again received by the arms, in suspension rather than in a supporting manner, but the moment of flight is still possible. When jumping onto a box or other reasonable surface, the weight can be taken on other parts of the body also.

Likewise, the body can be projected into the air by other than the legs, though the strongest propulsion obviously comes from the strong leg muscles. When the weight is over the arms they can push strongly to jump the body back onto the feet. If sitting on something high, it is possible to lift the body weight by contracting the strong thigh muscles to make it airborne, as it is also possible to lift the body weight from the knees; though these latter are not very powerful modes of movement.

Whenever considering elevation it is essential to focus attention on

the receipt of weight after flight, since landing is inevitable and safety is of major importance. It is easily recognized that just as one's body weight should be over the feet at the point of take-off for greatest propulsion, so it should also be over the feet, or quickly moved over the feet for landing safely. If the weight is over the feet, then great strength in the legs is needed on contact, followed by a quick but smooth release of tension to absorb the force generated by the momentum and weight of the body. This means that ankles, knees and hips "give" by flexing before returning to a standing position.

The landing can also be effected most safely by allowing the give of the body in absorbing the force to continue into a rolling action. This is particularly useful, in fact almost essential, if the body is off-balance, and becomes a very real safety factor. Much attention should be given to landing safely before children jump from heights.

Children love to run and jump, jumping onto and off anything they can reach and climb, therefore it is essential to enhance both their competence and safety by providing experiences focussed on elevating and receiving the body weight.

Content Objectives

The child should know:

Elevation

- (a) The body weight can be projected into the air by legs, arms, knees and hips.
- (b) The body weight can be propelled from feet to feet in five basic ways.
- (c) The body weight can be received by parts other than the feet as in catsprings (from feet to hands).
- (d) The arms can assist in lifting the body weight when jumping (summation of forces).
- (e) The stronger the push from the floor, the longer the moment of suspension in air, and the higher the jump.
- (f) The body weight must be over the feet for stronger upward propulsion.
- (g) The body can be projected into the air either to gain height or to gain distance, determined by the angle of the body and

direction of propulsion at take-off.

- (h) The head needs to be held high in leaping and jumping for a feeling of flight.
- (i) While in the air tension should be slight.

Process Objectives

Kinesthetic Differentiation

- (a) Differentiate the explosive or ballistic extension of ankles, knees, hips to project body weight into the air.
- (b) Differentiate parts of the body capable of propelling and receiving body weight.
- (c) Differentiates body lean and direction of propulsion for forward and upward leaps.
- (d) Differentiate flexing action of ankles, knees and hips to absorb force on receiving weight.

Kinesthetic Integration

- (e) Integrate the sequential and successive action of ankles, knees and hips in projecting the body into the air--and also on receiving weight after flight.
- (f) Integrate the action of the arms to assist in lifting the body weight.
- (g) Integrate the basic means of jumping and landing--coordinating the one or two foot take-off and landing combinations.

Kinesthetic Generalization

- (h) Generalize the actions governing propulsion such as using arms to help, or letting swing assist upward lift, or body lean to influence angle of take-off to all similar situations.
- (i) Generalize actions of force absorption to all situations where the weight of the body is received on those parts.

Classification

- (j) Identify different kinds of jumps--hop, leap, long jump, high jump, etc.

Interactions (Learning Experiences)

1. (Ropes scattered on the floor) Run anywhere jumping over each rope as you come to it. Jump as high as you can,--now gently.
2. Each stand by a rope. Find as many different ways of jumping over your rope as you can. Have you tried jumping in a different direction? How many different ways can you use your feet? Push off one and land on two--what other combinations are there?
3. This time stand at the end of your rope and see how far along you can jump. Are you using your arms to help? What happens to your body when you take off? This time think about how you are landing. What happens to your knees and ankles? Does any other part of you bend?
4. Try jumping from your feet to your hands to move along your rope--(remember to have strong arms and let them give a little when they take the weight).
5. Balance your weight over your arms then push with your arms to jump your weight back to your feet (try to sustain the moment when you are not touching the floor at all by giving a stronger push).
6. This time run and jump high in the air making your hands and feet come close together in some way (remember to keep head up for safety). Keep trying different ways to make hands and feet meet. Jump high enough to have time to do it. Now make hands and feet far apart.
7. With bars or climbing ropes--take a short run and see how far up the rope you can grasp when you jump. Jump and reach to hang on the bar. When coming off swing gently backwards and see if you can have a moment of flight after letting go before your feet touch the ground.

Suspension of Body Weight

Children love to climb over, swing from and hang onto any bars, horizontal ladders, climbing frames or scrambling nets that might be available on the playground or in the gymnasium. Since moving and manipulating the body around such apparatus entail being off the ground it is essential to provide children with experiences to enhance their psychomotor competency in this realm if only from a safety point of view. This will include developing a good sense of responsibility both for their own welfare and the safety of others, as well as developing the confidence to move securely.

With apparatus that encourages climbing to any height off the ground it is essential that the children know how to come down safely before they are allowed to climb too high. Many palms of hands have lost the skin through friction of sliding down a rope or metal pole instead of climbing down hand over hand. The use of the feet to support part of the weight becomes important here.

In any hanging or swinging activity the prehensile mechanisms of contacting and grasping the support are essential, as is the matter of muscular strength in wrists, arms, shoulders and back muscles. The body can, of course, also be suspended by other parts such as knees, elbows, hips—either alone or in combination. The more opportunities the child has to enhance these abilities the greater the resulting competency. It can easily be understood that the child needs to develop arm and shoulder girdle strength as the body is increasing in size and weight, therefore the earlier the introduction to activities involving suspension the better.

Since confidence is important to the safe use of equipment above ground level it is important that children are allowed to explore freely and not under pressure of any external expectations. Later, open-ended movement problems may be introduced.

Content Objectives

The child should know:

- (a) The body can be suspended from ropes, bars, etc., by using a strong grasp. This requires arm and shoulder girdle strength.
- (b) The body can be suspended by parts of the body other than the hands and fingers, singly or in combination (i.e., knees, elbows, hips).
- (c) Body shape can be varied while hanging in a variety of ways.

- (d) The legs and feet should be used as well as arms for climbing down ropes and poles, so that the skin on the hands is not burned by the friction of sliding down.
- (e) When suspended in mid-air, care should be taken to dismount before fatigue makes one lose one's grasp.
- (f) When suspended, various modes of traveling up, down, or along the supporting structure are possible, using various parts of the body.
- (g) When suspended, it is possible to use a swinging motion--varying direction of swing, speed of swing and direction of dismount by swinging.
- (h) The momentum of swinging the body can assist in traveling along a supporting structure.
- (i) Care and concern for safety of self and others is essential when above floor level.

Process Objectives

The child should be able to:

Kinesthetic Differentiation

- (a) Differentiate parts of the body by which one can hang from high apparatus.
- (b) Differentiate possible body shapes which can be achieved when suspending body weight by various parts of the body.
- (c) Differentiate swinging actions of the body to assist traveling in sideways, backwards and forward directions.

Kinesthetic Integration

- (d) Integrate various parts of the body from which to suspend weight.
- (e) Integrate combinations of body position when suspended by a particular part or parts of the body.
- (f) Integrate swinging and traveling actions into a repetitive motor pattern.

Classification (Cognition)

- (g) Identify actions of hanging, swinging, traveling and combinations of same.

Interactions (Learning Experiences)

It is assumed that there are climbing ropes, climbing bars, overhead ladders, climbing frames, geodesic domes and the like on which these activities may take place. The teacher should select those experiences most appropriate to the equipment they have available.

1. Move freely along, on top of, over, through, under and around the equipment. Make sure you have a firm grasp and that your feet help you when you climb down. Don't climb too high before you practice coming down again.
2. Find a place where you can try to hang from your hands, gripping very firmly. Can you find other parts of your body you can hang from--your knees, elbows, under your shoulders. How many parts can you have holding your weight at the same time?
3. Hanging from your hands can you make a stretched shape with your body? Keep changing that shape--try curled and twisted, changing the parts holding the bar.
4. Move along the bar using your hands, or hands and feet any way you like. Using just your hands try to start a swinging action with your legs. Try swinging them in different directions. Now try to move in the direction of the swing, keeping in time with the swing. Could you try to find some other way of swinging part of your body while you hang from the bar?
5. Try moving up and over or along the apparatus making the hands move close to the feet--now far away from the feet--can you alternate "close to" and "far away"?
6. Try moving up and over or along the apparatus making different parts of the body lead the way.
7. Try to find different ways of coming off the apparatus--dropping, jumping--on a forward or backward swing, remember to carry the body weight over the feet.

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