Catching Fundamentals/Development of Catching
Prepared for Softball Canada

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Introduction

Catching a ball is one of the basic skills of the game of softball and is included with the other basic skills of throwing, batting, fielding and base running. Catching a ball is defined as stopping the motion of the oncoming ball and controlling the movement of the ball. Catching a ball is one of the most difficult skills in the game of softball, and also one of the most important skills that all players must learn to perform effectively. The oncoming ball has velocity and direction, the velocity depending on how hard the ball is thrown. The catcher must be able to stop the forward motion of the ball and control its motion by squeezing it with the glove or the hands. To stop the motion of the ball the catcher must apply a force against the ball, and this force comes from muscle contractions in the hands and arms of the catcher. The velocity of the ball should be decreased over the greatest time and distance possible, to decrease the force per unit of time and prevent injuries.

When learning to catch, the beginner has several fears to overcome. The first is that the ball will hit them too hard in the fingers or in the face, and they will get injured. The second is that they will miss the ball and therefore appear unskilled. Catching is a difficult skill that must be developed in stages so the learner attains some success at each stage on the way to learning to catch. The young player will use a larger ball (playground ball) and use both hands when first learning to catch, then they will graduate to a smaller ball that is still soft (Nerf softball), then will move to the regulation softball when their tracking skills are developed.

Catching Fundamentals

The path of the oncoming ball is often unpredictable, and as a result there are several different kinds of catches that need to be mastered. However, there is one underlying aspect of catching that separates the elite players from the rest - the catch and the throw are performed all in one continuous motion. Whether it is an infielder catching a line drive or pop-fly or an outfielder catching a fly ball, the goal is to quickly transfer the ball from the glove hand to the throwing hand in the shortest period of time possible. Generally, an effort is made to catch the ball out in front of the body, and in one smooth and continuous motion bring the ball in towards the body and into the throwing position to have the quickest release of the ball possible. The smooth transfer of the ball is a result of a biomechanically correct catching technique that consists of several preparatory movements made prior to the catch and the correct upper and lower body movements made during the catch and ball transfer.

The player must also watch the ball closely from the time it is released of hit by another player, until it reaches the glove and is caught. A common error by unskilled players is to take their eyes off the ball too soon, and lose sight of it en route toward the
glove. Watching the ball into the glove is one of the fundamentals of catching that must be emphasized when teaching the skill.

Hand Position

Catching should be the first skill learned in ball games as it prevents the player from getting hurt if done correctly (Potter 1989) and the position of the hands in catching is the single most important factor in avoiding injuries (Klatt 1992). Depending on where the ball is caught, the position of the glove with respect to the body will change. “The hands should be positioned with fingers pointing upward when the ball is received above waist height and pointing downward when catching below the waist” (Klatt 1992). When the ball is thrown or hit directly to either side of the body, the fingers point to the direction of the body which the ball is thrown to or hit. For example, when the ball is thrown to the left side of the body, the fingers point to the left. Balls thrown/hit directly to the player’s midline and waist high are usually the most difficult to catch. When catching a ball waist high in the middle of the body the best way to position the glove is with the “glove hand palm down, fingers parallel to the ground and thumb down” (Potter 1989). Most athletes will either move their feet to try to catch it at their side or they will bend their knees and catch it at the level of their chest. The position of the glove hand is obviously very important in catching a softball, but so is the position of the throwing hand when catching.

“The fielder should always catch a thrown ball with two hands, and they should try to be directly in front of it when they catch it” (Klatt 1992). Both of the points made by Klatt are important when catching because both are necessary for a quick release. No matter what the skill level, players are always taught by coaches to catch with two hands whenever possible. If used properly, the throwing hand can help secure the ball in the glove by preventing it from falling out, but it also allows for a quicker transfer of the ball from the glove hand to the throwing hand. Elite athletes make use of the throwing hand by helping to secure the ball in the glove as they often take this time to grip the laces of the ball in preparation for the throw. The free hand needs to be in a position to secure the ball after the ball is in the glove, without interfering with the ball before it actually contacts the glove. To catch a ball above the waist the player should have palms turned away from his body, and his hands are placed in a position often referred to as “thumb to thumb” (Russo 1998) (Figure 1: Thumb to thumb catching of

Figure 1: Note the positions of the hands as the thumbs are pressed together when catching a fly ball.
a fly ball). To catch a ball below the waist the player should have his palms face upward and placed in a position commonly referred to as “pinky to pinky” (Russo 1998) (Figure 2: Pinky to Pinky catching of a ball below the waist). With the simple fundamentals of catching now covered, there are certain aspects of catching a ball that are evident in elite players that allow for a quick, clean transition from catching to throwing.

**Preparatory Movements**

The preparatory movements that elite softball players make prior to catching the ball are what separate the skilled from the unskilled players. The skill of actually catching a ball with a glove, once it is learned, does not change dramatically as the skill of the player increases. What changes as the player increases their skill is the position of the glove in relation to the rest of the body and the readiness of the athlete to throw following each catch. One of the most important aspects of catching is trying to keep the ball directly in front of you at all times. This is not always possible when playing defense, however every effort should be made to keep the ball directly in front of the body.

The importance of getting the body behind the ball cannot be underestimated as it is essential in order for a quick transition from catching to throwing, and it helps the player track the ball more accurately and assess the situation occurring in the game. A player must have smooth, quick footwork in order to get their body aligned with the ball- good catching technique starts with the feet. “Every effort should be made to bring the body in line with the approaching ball so that the forces can be received close to the body’s centre of gravity” (Klatt 1992). Absorbing the forces close to the athlete’s centre of gravity will help keep the athlete balanced and stable allowing them to move into the throw more quickly and in a more controlled manner. In addition, once the ball has been caught in front of the player’s body, the ball has a shorter distance to move while it is being transferred to the throwing hand (Figure 3: Catching the ball on the players midline). A quick release of the ball is very important, especially for an infielder who has a limited
amount of time to get the ball to the appropriate base to make an out. If the body is not lined up correctly to receive the oncoming ball, then more time is required in preparation for the throw.

**Footwork in Catching**

Placement of the feet is also another important factor to consider when preparing to catch a thrown/hit ball. “When a player is preparing to receive an oncoming ball, their feet should be separated slightly in a forward/backward stride to enlarge the base of support in the direction of the forces that must be resisted to provide stability” (Klatt 1992). There are two schools of thought on the proper footwork pattern when catching a ball. The position the player plays and the situation on the field will determine which footwork pattern to use. One pattern of footwork has the foot on the same side as the throwing hand forward as the other pattern has the same side foot back. Both footwork patterns use a staggered stance. In either case, the preparation phase of the catch consists of the necessary footwork to keep the ball in front of the body.

**Pattern #1**

When the body is lined up, the foot on the glove hand side of the body should be closest to the ball as the player should be positioned in the forward/backward oriented stride with hips and shoulders square to the direction of the oncoming ball (Potter 1989). As the ball comes closer, elite ball players begin to shift their weight towards the ball with their arms outstretched to meet the ball in front of their body and catch it with two hands (Potter 1989). The player then uses either a shuffle step or crossover step to keep momentum moving in the direction they intend to throw the ball as the back foot comes forward and plants either slightly in front of or in line with the other foot and there is a brief airborne phase as the feet switch positions. Once the foot on the throwing hand side plants, the athlete keeps their weight back and loads this leg in preparation for the forceful push-off that will be necessary for a powerful throw. Shortly after the foot plants, the athlete takes a stride with the foot on the glove-hand side of the body as it is planted in the intended direction of the throw with the foot either pointing to the target, or slightly closed to the target. The planting
of the foot on the glove hand side of the body is important as it must be open enough (with the toe pointing in the direction of the throw) to allow a full range of motion to occur in the hips.

Pattern #2

When the quickest possible release is desired and the player has a relatively short distance to throw the ball, the elite ball players will keep their foot on their throwing side back with the glove-hand side foot forward. “If the fielder throws right-handed, the ball should be fielded on the right side with the right foot back” (Klatt 1992). Therefore, once the ball makes contact with the glove, the momentum of the ball is still used as the backswing for the throw, but instead of requiring the step forward in force-producing phase of the throw there is a shift in the centre of gravity which can be executed a bit quicker. This footwork pattern is used primarily by infielders when catching soft line drives and pop-ups and who may be trying to double-up a base-runner. These are the ideal footwork patterns observed in elite softball players that are characteristic of a proper catch. In both situations, as the footwork occurs, the upper body is rotating away from the intended direction of the throw as both hands are bringing the ball up to the ear on the throwing-hand side and the ball is being transferred to the throwing hand.

Body Position in Catching

The first characteristic of a good catch is catching the ball well out in front of the body, which means reaching out to contact the ball early. Both arms need to be extended (elbow extension and shoulder flexion/extension depending on where the ball is to be caught), reaching out to the ball using the appropriate glove positioning. The extension of the arms is necessary as it will increase the range of motion over which the ball can be absorbed. “When the ball is in the glove, the hands should give (soft hands) and be brought into the body or into the throwing area” (Russo 1998). The further out in front of the body the ball is caught, the greater the distance the player has to absorb the impact of the ball and the less impact per unit time (Figure 4: Catching the ball in front of body with extended limbs). “As the ball hits the glove, the hands are pulled in toward the body, and the body’s weight is transferred to the back foot to increase the distance over which the velocity can be reduced. When the catch is to be followed by a throw, the momentum of the oncoming ball should be transferred toward the side of the throwing arm; the give with the catch becomes the backswing or preparation phase.

Figure 4: The player has extended her elbows in order to allow for absorption of the ball and decrease the force which is applied to the
of the throw that follows” (Klatt 1992). Therefore, the catch and the throw becomes all one skill. “Every fielder should be encouraged to get behind the ball and into a throwing position before the ball arrives” (Klatt 1992).

Once the ball is caught the athlete manipulates the ball’s momentum and redirects it as the upper body is rotated in the direction of the thrown ball (away from the direction the player now wants to throw the ball). Thus, when performed correctly, the athlete uses the momentum of the ball to move the ball and glove together to the correct throwing position in one smooth motion. This is a very fast and efficient way to transfer the ball from the glove hand to the throwing hand and why it is so important to have the correct footwork so the ball can be caught out in front of the body. If the athlete does not catch the ball in the correct position then the athlete must take extra time and expend energy to get into the correct throwing position. The rotation that occurs in the upper body is important as it helps put the trunk muscles on the front of the body on a stretch that will initiate the stretch reflex leading to a more powerful contraction to occur during the throw. If the athlete is not positioned correctly, the athlete must still get into this “coiled” position with the upper body rotated away from the direction they intend to throw the ball but now the athlete must carry out some additional movements expending more energy and requiring more time.

Other Aspects of Catching

Other aspects of skilled catching technique observed in elite players are related to maturity and experience. Some balls are hit at such a high velocity that it is difficult to keep your eyes on the ball and watch it directly go into the glove. Elite softball players have the highly skilled ability to catch hard line drives without appearing to turn their head and look at the ball. Citing Fitch and Turvey 1977 and Savelsbergh 1990, Montagne writes that the, “…time of arrival of the ball can be predicted using peripheral vision and it has also been established that the place of arrival can also be predicted from the motion of the central point of expansion” (Montagne 1993). The athlete therefore is able to pick up the ball without having to move his/her head. The ability to predict where the ball is hit or thrown is a key attribute of good softball players. If a ball player is able to predict where the ball is going to be, preparatory movements can be started earlier to help ensure that the player is in the correct position when need be. Montagne adds that, “…keeping one’s eyes on the ball is not necessarily the most appropriate strategy. The choice depends in fact on the time constraints involved in the task” (Montagne 1993) and also on the skill level of the athlete.

In addition to anticipation, elite athletes also have very good body awareness and be able to know where their limbs are in relation to their body and where their body is in relation to the softball field. The elite softball players can catch the ball without having to look at the position of their glove. This allows the players to analyze the situation occurring on the field – batter, other base runners and position of teammates which will determine where the athlete will need to throw and help decide the correct way to
execute the catch and throw. Hence, the correct direction to throw the ball can be determined earlier and the correct footwork chosen and executed.

*Long Term Athlete Development of Catching*

When coaching young softball players it is obvious that young players will not be able to catch a ball in the skilled manner outlined above, however there has been considerable research outlining the stages of development of catching and which motor patterns that can be observed at each stage of development. The National Long-term Athlete Development program that has been laid out for Canadian athletes (Smith 2005) and is based on extensive research on growth and motor development research. The program has already broken down the developmental levels into 7 stages. These stages are as follows: Active start (0-6), FUNdamentals (males 6-9, girls 6-8), Learning to train (males 9-12, girls 8-11), Training to train (males 12-16, girls 11-15), Training to compete (males 16-23+/-, girls 15-21+/-), Training to win (males 19+/-, girls 18+/-) and Active for life (any age). See Appendix A for details of this program.

*Stages of Development in Catching*

**Active start stage (0-6 years):**

Children’s first attempts to catching an airborne object within this stage are usually passive with their palms facing upwards as they try to trap the ball against their chest with no attempt to move their arms or body toward the oncoming ball (Payne 2002). At this stage in development, children have not developed the necessary visual perception skills to judge speed and distance. “As their visual/perceptual systems improve, children attempt to adjust their hands and arms to the ball’s changing flight characteristics”(Payne 2002). Payne has determined that around the age of five the visual/perceptual system is advanced enough that children of this age are now observed to be able to anticipate some of the ball’s changing flight characteristics as they are able to focus their eyes on the thrower, the ball and their own hands (2002). However, children in the Active Start stage still have poor timing and coordination skills that limit their ability to retain control of the ball. This may lead the skill of catching to look delayed and in slow motion (Payne 2002).

Another characteristic of this age group that is often observed is a fear of the ball when attempting to catch it. This usually happens when the ball is moving too fast for the child to catch with confidence, suggesting that ball speed is a critical factor in learning the track and catch a ball. When a young softball player is afraid of the ball, the player will usually turn their head away from the ball and/or close their eyes and sometimes lean backward away from the ball or even move away from the ball. Payne, who has done extensive research in the developmental stages of catching, sites Seedfeldt’s 1927 study where Seedfeldt found “these fear reactions in children 4 through 6 years of age but found no such negative reactions to a projectile in children between 1.5 and 3 years.” Payne (2002) suggested that previous failed attempts at the
catching task could be a possible explanation for these findings that have caused this conditioned response. For this reason, efforts need to be made to increase the chances of success in catching a ball early on in the development of this skill.

Research has reported several factors that are correlated with a child’s success at catching, the most obvious being ball speed and placement. If the ball is thrown too fast, children in this developmental stage do not have the coordination and strength to move their glove hand fast enough to catch a ball that is not already going directly into their glove. Coaches and parents must therefore be conscious of ball speed when teaching children in this age group to catch a ball, keeping in mind the importance of early success in skill development. The other factor already mentioned, placement of the thrown ball is very important. Where the ball is thrown has a significant impact on the performance and maturity of the catching technique used (Strohmeyer 1991). “Tosses to the body are less challenging than those away from the body” (Strohmeyer 1991). As previously mentioned children in this stage of development are unable to judge many of the flight characteristics of the ball and thus are unable to determine whether the ball is close to or further away from their body until it is too late. Payne has found that by age 5, 60% of children will move their arms and trunk towards the direction of the ball but no extra steps will be taken in the process (2002). Consequently, throws towards the child’s body are easiest for young softball players in this age group to catch. Therefore, to increase the chances of success, coaches and parents should throw the ball towards the child’s body so little glove movement is necessary. Since it is difficult to catch a ball that is aimed directly towards the middle of the body, attempts should be made to throw the ball toward the glove itself so that minimal movement of the glove is required prior to the catch.

Payne has also addressed the question of whether or not a child should first learn to catch with or without a glove. Payne has found that glove catching is easier as it improves catching success by reducing the precision of limb-hand positioning any by removing the temporal grasping component. (Payne 2002). This statement is only true however if the child has a strong enough grasp to close the glove efficiently. In summary, during the earlier stages, allow young softball players in this developmental stage to use a glove and avoid the player catching with the bare hands as you want to build up the child’s confidence during this developmental phase. In other words, shape the practice situation in a way to create a greater opportunity for successes than failures – stick with the glove, throw the ball towards the child’s glove and use an appropriate ball speed.

Other things to keep in mind when working with children in this developmental stage: Prior to the age of 4 years, there will be very little difference in the developmental level of catching between boys and girls (Payne 2002). Coaches and parents need to be mindful that although the majority of children will follow the motor development pattern described above, there will always be individual differences.
evident within any group/team of young softball players. Stage 4 of Dr. John Haubensticker’s developmental sequence for catching using the total body approach, is when the child extends his/her arms out towards the ball with the elbows slightly flexed and the ball is caught solely with the hands—no other body part makes contact with the ball during this process. Research has reported that by age five, 60 percent of girls exhibited a stage 4 developmental level of performance whereas a majority (60%) of the boys did not achieve this level of development until 6 years of age (Payne 2002). See figure 1-1 for the developmental sequences of catching as laid out by Haubenstricker and colleagues as printed in Payne 2002. This finding is also supported by Ulrich (2000) who found that 80% of children by the age of 5 have their hands out in front of their body with their elbows flexed in preparation for the throw (2000). Young players in the Active start stage do not absorb the force of the ball despite the fact that they have correctly extended their arms towards the ball. Children do not learn to absorb the force of the ball until the age of 7 or 8 (Ulrich 2000). With respect to one-handed catching, J.G.Williams determined that, “success with one-handed catching was only one-half as successful as two-handed catching” in a 1992 study (Payne 2002). By the end of the Active Start stage, a majority of young players are capable of catching a low velocity ball with reasonable success with a glove, with two hands, and are ready to work more on catching the ball properly, rather than just being able to catch the ball. With that being said however, children develop at different rates and it is important for coaches to determine which developmental stage each of their young players are at. Varying the size of the ball, type of the ball and velocity the ball is thrown at will help a coach determine the skill level of each of their players (Knudson 2002).
Stage 1  The child presents his arms directly in front of him, with the elbows extended and the palms facing upward or inward toward the midsagittal plane. As the ball contacts the hands or arms, the elbows are flexed and the arms and hands attempt to secure the ball by holding it against the chest.

Stage 2  The child prepares to receive the object with the arms in front of the body, the elbows extended or slightly flexed. Upon presentation of the ball, the arms begin an encircling motion that culminates by securing the ball against the chest. Stage 2 also differs from stage 1 in that the receiver initiates the arm action prior to ball-arm contact in stage 2.

Stage 3  The child prepares to receive the ball with arms that are slightly flexed and extended forward at the shoulder. Many children also receive the ball with arms that are flexed at the elbow, with the elbow ahead of a frontal plane.

Substage 1: The child uses his chest as the first contact point of the ball and attempts to secure the ball by holding it to his chest with the hands and arms.

Substage 2: The child attempts to catch the ball with his hands. Upon his failure to hold it securely, he maneuvers it to his chest, where it is controlled by hands and arms.
**Stage 5**  The same upper segmental action is identical to stage 4. In addition, the child is required to change his stationary base in order to receive the ball. Stage 5 is included because of the apparent difficulty that many children encounter when they are required to move in relation to an approaching object.

**FUNdamental Stage** (males 6-9; girls 6-8):

Within this stage, the young ball players who have not yet learned to catch the ball with their hands only should master this characteristic of catching. According to research done by Dale Ulrich, approximately 60% of children by age 7 can catch the ball with hands only and elbow flexion is used to absorb the force and 80% of children by age 8 can catch the ball with hands only. The exact age of the onset of this mature motor pattern is still a debate along with gender differences evident in this stage. Important to note however, reaction times do not differ between boys and girls (Owings 2003). Payne has found that 60% of boys exhibited the most mature catching pattern (stage 5 – refer to figure 1.1 above) somewhere between 7.8 – 8 years of age, whereas only 40% of the girls at these ages displayed the mature catching technique (2000). Payne however found that 60% of all girls show a mature catching pattern by 6.5 years of age. Nevertheless, both boys and girls should achieve a mature catching pattern where the child will change his/her stationary base to catch the ball somewhere between the ages of 5-8 years of age. Individual differences determined by factors such as genetics and amount of practice will determine where within this age range the child is able to move towards and catch a ball with two hands.

**Learning to train stage** (males 9-12, girls 8-11):

In the Learning to Train stage, the motor pattern matures once again and now the correct glove position to catch the ball in different locations is first observed in children at this stage. Children younger than 11-12 years of age are rarely able to adjust the palms of the hand to the path of the oncoming palm and usually “choose” to catch with
palms facing each other (stage 2) (Strohmeyer 1991). Also typical of the catching technique used by young softball players in this stage is swiping at the ball (with the glove in the correct position) rather than letting the ball come to the glove and properly absorbing the full impact of the ball. Some naturally talented players will use “soft-hands” in this age group whereas others will struggle with the concept. Step three of the developmental level of the hands component of catching as proposed by Robertson et al. (1980) is described in Strohmeyer’s 1991 article. “The palms of the hands are adjusted to the flight and path of the oncoming object. Thumbs or little fingers are placed close together, depending on the height of the flight path” (259).

When dealing with one-handed catching, a study by Fischman, Moore, and Steel in 1992 concluded that, “by 12 years of age the skill appeared to be essentially mastered” (Payne 2002). When catching with one hand however, it is essential that the young athlete be able to grasp the ball firmly with the glove without requiring the other hand to keep the ball in the glove. The goal is to catch the ball with two hands at all times, however there are situations when the one-handed catch is necessary, and it is within this age group that young softball players have the necessary strength and coordination to catch with one hand successfully, often. “One-handed ball-catching is a task involving coincidence-anticipation (Belisle 1963)” (Montagne 1993).

**Training to Train Stage (Males 12-16; females 11-15):**

By the age of 15, children are capable of predicting the ball’s flight characteristics, and can carry out preparatory responses well in advance of the ball’s arrival. The eyes are able to watch the ball without needing to watch their own hands as they are controlled entirely from the young player’s own awareness of the position of one’s own limbs (Payne 2002). A mature catching technique should be evident by this stage. This includes moving the entire body so as to control the projectile with only the hands and the mature catcher will absorb the catch by flexing elbows at the moment of hand-ball contact – the elbows act as shock absorbers (Payne 2002). The emphasis is not whether or not the catch can be made, but whether or not the necessary footwork patterns can be performed correctly to enable a fast throw following the catch. Within this stage, focus can be placed on the movements required for a smooth transition into the throw, and footwork patterns for situational defensive plays that are required for the faster throw release can be taught as the young athletes have the necessary motor patterns, strength and coordination to execute these more specific movements. At this stage, the athletes have a good grasp of the basics and are ready for more advanced catching techniques.
References


