



Baseball / Softball

Developing Strength and Power for Fastpitch Softball

The Driving Force of the Game

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The level of competition in the sport of fastpitch softball has risen sharply over the past decade. This can be attributed in part to the international attention brought to the sport with its addition as an Olympic sport in 1996.

To be competitive at such elite levels, softball athletes must place greater emphasis on strength and conditioning to increase overall level of play and performance. Although similar to baseball in many respects, softball is played on a field with smaller dimensions. The distances between the bases are only 60 feet compared to 90 feet and the pitching distance is also shorter, between 40 and 43 feet depending on the league of play.

Softball therefore places unique demands on an athlete to repeatedly develop speed and power over short distances. With this in mind, increasing strength and power could be the driving force behind success in an increasingly competitive sport.

Softball Specific Needs

The nature of the sport of softball may cause the development of a favourite or dominant side. Such favouritism or single

side dominance may be responsible for significant strength and power differences between the dominant and non-dominant legs in some collegiate softball players (Newton, unpublished data 2004).

To minimize the chance of developing a large imbalance, strength training should become a key component of training. Simple changes to an exercise such as the lat pull-down or squat can be used to emphasize one side at a time (See Figures 1 & 2), minimizing strength imbalance. Balancing musculature will allow you to be a more versatile player in eliminating a “weaker” playing side and may decrease the potential risk of injury.

Each position in softball may demand slightly different movements, physiological demands, or result in different common

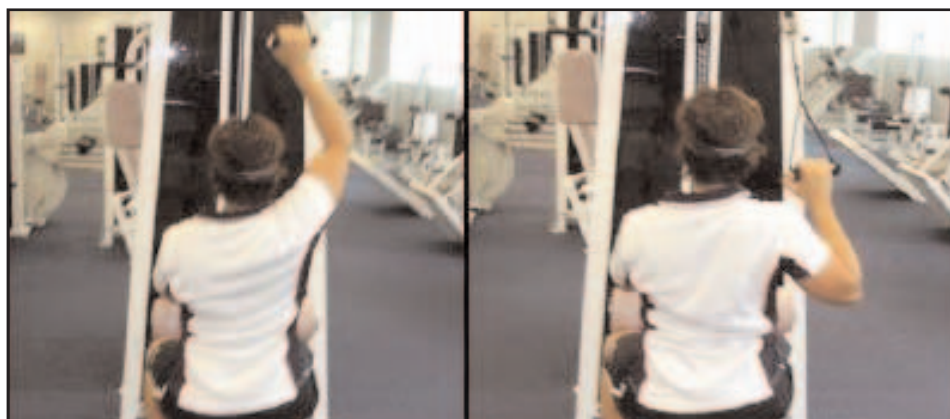


Figure 1. Example of 1-arm lat pull-down at starting (left) and ending (right) positions.

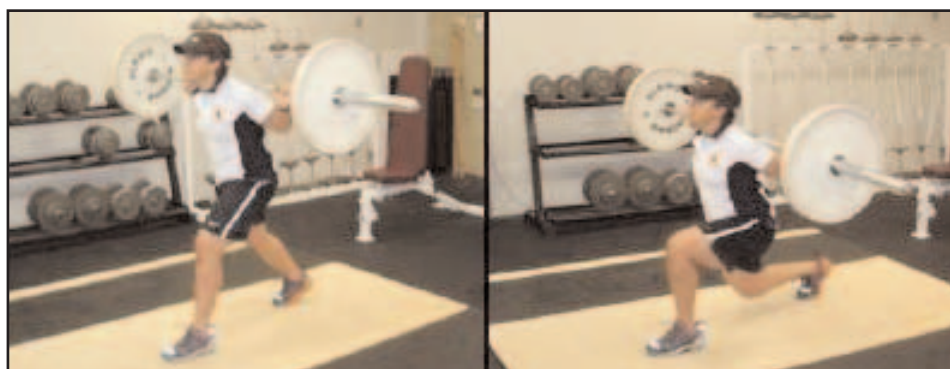


Figure 2. Example of split stance squat at starting (left) and mid-point (right) positions.

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injuries³. Therefore, it is important to separate softball players into similar categories for a position specific needs analysis. For example, players would most commonly be separated into infielders, outfielders, catchers, and pitchers. Following this separation by positions one can recognize the slightly different exercise selections that may help athletes increase strength in their position specific movements. An example of exercise selections that could be added to a general strength program for position specificity is shown in Table 1.

Infielders rely predominantly on speed and agility in a lateral motion. Therefore, adding a lunge directed laterally instead of the traditional forward lunge could help strengthen the muscles more associated with the movement of an infielder.

The main concern for outfielders would be the ability to sprint to a spot and make long, strong throws. Therefore, emphasis on power development with jump squats and bench press throws is critical, but all softball players could benefit from training with ballistic style movements such as jump squats and bench press. This type of training has been shown to increase both sprint speed and throwing velocity⁴.

Catchers are unique in that they spend a large amount of time in a squat position. To be able to explode out of this position for fielding or throwing is crucial. Therefore, an emphasis on strength and power in and out of this position can be obtained using the suggested full range of motion squat or power clean (performed starting from the floor).

Pitcher Specific Considerations **Developing a “Driving Force” in Pitching**

Possibly the most overlooked player on the field in terms of strength and conditioning may be the pitcher. In a survey of female collegiate windmill pitchers, 69.8% of the pitchers reported doing the same resistance training and conditioning program as the rest of their softball team. In addition, these surveys revealed some interesting information on key areas of weakness and/or overuse that lead to injury. As level of competition increased from Division III to Division I, so did percentage of pitchers experiencing injury².

When it comes to pitcher specific strength and conditioning, most often a focus is made on strengthening of the upper body, specifically the rotator cuff to combat the common shoulder injury⁵. However, for increased performance it is extremely important for a pitcher to develop lower body power. The true drive behind pitching is a result of the force developed in the legs during the windmill motion.

When designing a strength and conditioning program for a pitcher, emphasis should be placed on the use of multi-joint, explosive exercises. For example, exercises such as the power clean, jump squat, and bench press throw contribute to both the strength and explosiveness of an athlete.

Another area related to performance that must be considered is power endurance, or the ability to maintain power and therefore pitching speed throughout the game. To improve this type of conditioning, one should add some type of repeat high speed/power drills. For example short length repeat sprints with a sprint

Table 1. Example of position specific movements and related exercises to strengthen muscles in a similar movement pattern.

Position	Affiliated Movement	Position Specific Exercises
Infielders	Lateral speed and change of direction agility	Lateral Lunges Jump Squats
Outfielders	Sprint speed, long throws	Jump Squats Bench Press Throws
Catchers	Ability to move out of squat position	Full Squats Power Clean
Pitchers	Windmill pitch (repeat lower body power)	Hang Clean Jump Squats

to rest time ratio between 2:1 and 3:1 allows for increases in both anaerobic and aerobic capacity¹, which is a crucial part of pitching success. A sample program for a pitcher looking to increase power endurance can be found in Table 2.

This program is designed to use a slightly different set and repetition range during the ballistic squat jumps and bench press throws in an effort to emphasize multiple bouts of peak power production as a pitcher would need. The rest of the program is set up to increase strength

of major muscle groups while still remembering to have exercises such as the 1-arm lat pulldown (Figure 1), and split stance squat (Figure 2) for muscle balance between sides.

In addition to resistance training, a suggestion for two sessions of interval running on the opposite days to strength training has been made. As physical condition increases, the length of these sessions can be increased, however it is important to keep the session within your ability. This means that increasing

the total time too quickly will not allow you to successfully be working at a near maximal speed, which is key to developing power endurance, or anaerobic capacity. Therefore, always try to roughly monitor the decline in speed or power throughout the workout, in addition to the work to rest ratio. For example, recording the distance covered during the sprint portion of the interval, or if the distance for the sprint is standard, recording time to complete the sprint can be monitored.

Table 2. Example of basic pre-season strength and conditioning program for a pitcher seeking power endurance.

Day	Plyometric or Conditioning	Resistance Training		
		Exercise	Sets	Repetitions
Monday	Pitcher Specific Drills	Jump Squats (30 – 50% 1RM)	6	2
		Bench Press Throw (30 – 50% 1RM)	6	2
		Back Squat	3	6
		Hamstring Curl	3	6
		Upright Row	3	6
		1 arm Lat Pulldown	3	6
Tuesday	Intervals: 60 ft repeat sprints with 3:1 rest ratio	—	—	—
Wednesday	Plyometrics: Bounds, Drop Jumps, Medicine Ball Toss Drills	Hang Clean	3	4
		Push Press	3	8
		Split Stance Squats	3	8
		Incline Bench Press	3	8
		Seated Row	3	8
Thursday	Intervals: 20 ft repeat sprints with 2:1 rest ratio	—	—	—
Friday	Pitcher Specific Drills	Jump Squats (30 – 50% 1RM)	6	2
		Bench Press Throw (30 – 50% 1RM)	6	2
		Back Squat	3	6
		Hamstring Curl	3	6
		Upright Row	3	6
		1 arm Lat Pulldown	3	6

The plyometric session on Wednesday should be completed before the strength training session. A variety of exercises could be used, however bounds (both single leg or two leg), and drop jumps (stepping off a box between 20 to 60 cm and performing a vertical jump immediately) have been suggested. In addition, upper body plyometrics can be performed using a medicine ball. Medicine ball drills can include two-handed over-head throws, chest passes, twists, as well as many other variations. Monday and Friday are set-aside as days for the pitcher to work on specific drills such as “spins”, which emphasize correct directional spin of the ball for pitches to break effectively.

It is very important when balancing the training for the sport and supplemental training (resistance training, intervals, plyometrics) to allow for rest and recovery. Typically, softball practice is performed in the afternoon, therefore it would be most beneficial to perform any supplemental training in the morning in order to spread out training and allow maximal efforts at both sessions.

Strength and conditioning is an area that an athlete can always work and further improve upon. Training to further develop your strength and power can increase your ability and confidence to perform at a higher level both up to bat, and in the field. Implementing this type of preparation into your training can truly provide you with the “driving force” behind success in fastpitch softball. ▲

References

1. Fleck S. (1983). Interval training: Physiological basis. *NSCA Journal*, 5(5):40,57 – 63.
2. Hill JL, Humphries B, Weidner T, Newton RU. (2004). Female collegiate windmill pitchers: Influences to injury incidence. *Journal of Strength and Conditioning Research*, 18(3):426 – 431.
3. Kraemer WJ. (1983). Exercise prescription in weight training: A needs analysis. *NSCA Journal*, 5(1):64 – 65.
4. McEvoy KP, Newton RU. (1998). Baseball throwing speed and base running speed: The effects of ballistic resistance training. *Journal of Strength and Conditioning Research*, 12(4):216 – 221.
5. Rudolph BS, Smith AL. (1999). Strength training for the windmill softball pitcher. *Strength and Conditioning Journal*, 21(4):27 – 33.
6. Stone MH, O’Bryant H, Garhammer J, McMillan J, Rozenek R. (1982). A theoretical model of strength training. *NSCA Journal*, 4(4): 36 – 39.

About the Author

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