

Lower Extremity Strengthening/Balance Program

Although the primary injury may be the athlete's throwing arm, a lot of issues stem from poor lower body strength and balance. The act of throwing a baseball/softball involves the transfer of energy from the feet through the legs, pelvis, trunk, and shoulder through the elbow and hand. Therefore, the entire body is utilized when throwing. It is essential that the athlete understands the concept that primary power comes from the legs and trunk when throwing; therefore, proper position, balance, and strength will provide the greatest force output. It is also essential that the athlete understands the shoulder and elbow's purpose is to transfer force from the legs/trunk through ball release. The athlete should not feel stress on their shoulder and/or elbow with proper mechanics. When the lower extremity lacks adequate balance and/or strength, the athlete is initially set up in a compromised position and tends to put more stress on the upper extremity to compensate. Over time, this will cause injury to the upper extremity.

This program is designed to focus on improving strength and balance of the lower extremities while addressing some upper extremity strength and stability. It will be a three-day lifting split including Olympic lifts, accessory work, plyometrics, and core work. Initially, the athlete will test their 1 rep max (1RM) metrics. The program is set up in three four-week cycles with a progressive strengthening concept. A deload week in between phases will be implemented. The purpose of a deloading week is to allow the athlete's body to adequately recover prior to progression of a more challenging phase. The deloading phase will be crucial to the athlete's progression. The deloading week is meant to be an active recovery week and should not be difficult. If the athlete is unsure of what an exercise in the program looks like, it is recommended that they consult a member of their rehab team (ie. physical therapy, occupational therapy, athletic trainer, coach). Otherwise, the athlete may Youtube the exercise. Proceed with caution if googling/youtubing videos because form is not always perfect from videos posted. The athlete's best option is always to consult a qualified trainer/therapist/coach if they have questions. By the end of the program, the athlete will retest their 1RM metrics to assess outcomes.

Purchase of a lifting journal is necessary to track weight lifted each session and ensure you are progressing. Effort and execution are key for progress, and tracking your lifts will help stay organized. Once the program has been looked over, please copy it into a lifting journal and bring this journal with you every time as well as a pen to record weight lifted.

Recovery should also be addressed during this program. Nutrition, hydration, and sleep are the three primary ways to optimize recovery. The athlete should be eating an adequate amount of calories and drinking enough water (recommended 96-128 fl oz) to support recovery throughout. If the athlete has specific questions on what types of food they should be eating and supplementation it is recommended they consult with a registered dietitian or nutritionist. The athlete should also be aiming to get 6-8 hr of sleep each night.

Any additional questions please contact your physician and/or rehab team.

Abbreviations:

- BB: Barbell
- DB: Dumbbell
- DB: Kettlebell
- SS: Superset (this means you will perform 1 exercise, then immediately perform the next exercise)
- RDL: Romanian deadlift
- SA: Single arm

Pre-test:

- 1 RM
 - Squat
 - Deadlift
 - Bench
 - Chin ups (bodyweight reps):
 - *If unable to do a bodyweight chin up, use assisted machine
 - 40 yard dash

Post-test:

- 1 RM
 - Squat
 - Deadlift
 - Bench
 - Chin ups (bodyweight reps):
 - *If unable to do a bodyweight chin up, use assisted machine
 - 40 yard dash:

Phase 1

- Legs/Push/Pull
 - Warm up for each day:
 - ER/IR rotator cuff resistance band exercises 2 x15
 - Push ups 2 x10
 - Bodyweight squats 2 x20
- Legs
 - BB Squat
 - 5 sets: 15/12/10/8/6
 - SS with box jump x15
 - DB RDL 4 x12
 - Each leg done one at a time, not alternating
 - You may use a pole to hold on for initial balance, but over time this should be faded out
 - SS with bodyweight curtsy lunge x12
 - Each leg done one at a time, not alternating
 - You may use a pole to hold on for initial balance, but over time this should be faded out

Phase 1 (continued)

- Barbell hip thrusts
 - 4 sets: 12/10/8/8
- Lying leg curl machine 3 x15
 - Slow tempo for 3 second count on the portion of the exercise where you bring the legs back to a straight position
 - May use a seated leg curl machine if lying leg curl is unavailable
- Kettlebell Goblet squat 3 x20
 - Hold kettlebell in front of body at chest height
- Abs: 3 sets of each exercise
 - Bicycle crunch x15 each side
 - Crunch x15
 - Reverse crunch x15
- Pull
 - Deadlifts
 - 5 sets: 15/12/10/8/6
 - 1 arm DB bent over row
 - 4 sets: 12/10/8/8
 - Swiss ball hamstring curl 3 x20
 - SS with inverted row (or TRX row) x15
 - Banded face pulls 5 x12
 - May use a cable machine
 - Abs: 4 sets of each exercise
 - Hollow holds x30 seconds
 - St leg crunches x15
 - V-ups x10
- Push
 - Landmine squat to press
 - 4 sets: 15/15/12/12
 - SS with weighted plank on a BOSU ball x30-45 seconds
 - Kneeling SA DB press 4 x10 each side
 - Opposite knee will be up
- Push ups on a BOSU ball 3 x20
- DB chest press
 - 5 sets: 20/15/12/10/10
- Med ball throws into a wall 5 x8
 - Use a follow through shuffle step to gain momentum

Deload Week

- Legs
 - Squat 2 x20
 - RDL 2 20
 - Walking lunge 2 x20
- Pull
 - Deadlift 2 x20
 - Row 2 x20
 - Rear delt fly 2 x20
- Push
 - Seated military press 2 x20
 - Bench 2 x20
 - Push up 2 x20

Phase II

- Legs/Push/Pull
 - Warm up for each day:
 - ER/IR rotator cuff resistance band exercises 2 x15
 - Push ups 2 x10
 - Bodyweight squats 2 x20
- Legs
 - BB Squat
 - 3 sets: 10/8/6
 - SS single leg step up x10 each side
 - These should be quick and powerful steps
 - Following, perform 3 sets of 1 rep BB squats. Each set should be a HEAVY HEAVY HEAVY reps. Please have someone present to spot you for this
 - SL DB RDL 4 x10 each leg
 - SS with DB curtsy lunge x10 each leg
 - Each leg done one at a time, not alternating
 - SL DB hip thrusters 4 x12 each leg
 - SL lying leg curl machine 3 x10 each leg
 - Slow tempo for 3 second count on the portion of the exercise where you bring the legs back to a straight position
 - May use a seated leg curl machine if lying leg curl is unavailable
 - SL kettlebell piston box squats 3 x12 each leg
 - Make sure box is no taller than knee height
- Abs: 3 sets of each exercise
 - Bicycle crunch x20 each side
 - Swiss ball crunch x20
 - Reverse crunch x20

- Pull
 - Deadlifts
 - 4 sets: 12/10/6/3
- After the last set, perform a back off set. You will lower the weight to whatever you are able to perform 12-15 reps at
 - BB row
 - 5 sets: 20/15/12/10/8
 - SL slider hamstring curl 3 x15 each leg
 - SS with chin ups x10
 - Perform chin ups assisted if unable to achieve 10 reps bodyweight. If 10 reps bodyweight is too easy, either increase reps or add weight
 - Split squat stance resistance band row to ER to press 4 x12-15 reps
 - Non-throwing foot will be in front
 - Please utilize a resistance band that is challenging, but does not have to compensate for because it is too heavy
 - Abs: 4 sets of each exercise:
 - Hollow holds x45 seconds
 - St leg crunches x20
 - V-ups x15
- Push
 - Landmine rotation to press 4 x10
 - SS with elbow to hand planks x30 seconds each arm leading per set
 - Seated on swiss ball DB press
 - 5 sets: 20/15/12/8/8
 - Med ball push ups 4 x15-20 reps
 - Swiss ball DB chest press
 - 4 sets: 12/12/10/8
 - Med ball throws into a wall 5 x8
 - Use a follow through shuffle step to gain momentum

Deload Week

- Legs
 - Squat 2 x20
 - RDL 2 x20
 - Walking lunge 2 x20
- Pull
 - Deadlift 2 x20
 - Row 2 x20
 - Rear delt fly 2 x20
- Push
 - Seated military press 2 x20

Phase III

- Legs/Push/Pull
 - Warm up for each day:
 - ER/IR rotator cuff resistance band exercises 2 x15
 - Push ups 2 x10
 - Bodyweight squats 2 x20
- Legs
 - BB reverse lunge (barbell on back)
 - 4 sets: 12/12/10/10 each leg
 - If you do not feel comfortable balancing a barbell, utilize a smith machine
 - SS single leg step up jump with kettlebell (hold kettlebell to side of body) x15 each leg
 - DB RDL on a BOSU ball
 - SS with barbell curtsy lunge (barbell on back)
 - Each leg done at one time, not alternating
 - BB hip thrusters with small band on quads 4 x12
 - After last set, immediately perform as set with just the small band for 20 reps
 - Nordic curls 4 x10
 - SL kettlebell piston box squats 3 x15 each leg
 - Abs: 3 sets of each exercise:
 - Bicycle crunch x20 each leg
 - Swiss ball crunch x20
 - Reverse crunch x20
- Pull
 - Deadlifts
 - 5 sets: 20/20/15/12/10
 - Bird dog row with kettlebell 5 x12 each side
 - SL slider hamstring curl 3 x20 each leg
 - SS with pull ups x10
 - Perform pull ups assisted if unable to achieve 10 reps bodyweight. If 10 reps bodyweight is too easy, either increase reps or add weight
 - BB cleans
 - 5 sets: 15/12/10/8/8
 - Abs: 4 sets of each exercise
 - Hollow holds x1 min
 - St leg crunches x20
 - V-ups and a BOSU ball x15
- Push
 - SA DB chest press on swiss ball
 - 4 sets: 12/10/8/8
 - SS with planks with a kettlebell pull through x1 min
 - SA split squat stance to squat to DB press 5 x8

Dr. Scott Trenhaile, MD
Michael D. Gilbertson, PAC
Tori Homb, APN

SCOTT W. TRENHAILE, M.D.
Clinical Assistant Professor / Orthopedic Surgeon

Phone: 815-398-9491
info@scotttrenhailemd.com
324 Roxbury Road | Rockford, Illinois 61107
www.scotttrenhailemd.com



- Plyo push ups 4 x20
- Swiss ball single arm DB chest press 5 x8
- Med ball throws into a wall 5 x8
 - Use a follow through shuffle step to gain momentum

Deload Week

- Legs
 - Squat 2 x20
 - RDL 2 x20
 - Walking lunge 2 x20
- Pull
 - Deadlift 2 x20
 - Row 2 x20
 - Rear delt fly 2 x20
- Push
 - Seated military press 2 x20
 - Bench 2 x20
 - Push up 2 x20

References:

1. *Dr. Josh Heenan; The 90 mph Formula*