

A powerful in depth approach to training female athletes.

TRAINING THE FEMALE ATHLETE: A Scientific Approach to Becoming Strong and Stable - Females Have Limitless Potential!

by Michael K Butler B.A.; P.T.A.; CSCS*D; RSCC*D; NMT

Order the complete book from the publisher

[Booklocker.com](http://www.booklocker.com)

<http://www.booklocker.com/p/books/9053.html?s=pdf>

**or from your favorite neighborhood
or online bookstore.**

A female athlete with a very fit physique is shown in a gym, performing a barbell squat. She is wearing a light blue sports bra, black shorts, and red sneakers. She is holding a barbell with weights across her shoulders. The background shows gym equipment and a bright light source, possibly a window or a studio light, creating a dramatic effect.

TRAINING THE FEMALE ATHLETE

A Scientific Approach
To Becoming Strong and Stable

***FEMALES HAVE
LIMITLESS POTENTIAL!***

Michael K Butler

B.A.; P.T.A.; CSCS*D; RSCC*D; NMT

Training the Female Athlete

**A Scientific Approach To Becoming Strong and Stable
Females Have Limitless Potential!**

MICHAEL K. BUTLER

B.A.; P.T.A.; CSCS*D; RSCC*D; CSPA

Copyright © 2017 Michael K Butler

ISBN: 978-1-63491-977-7

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, recording or otherwise, without the prior written permission of the author.

Published by BookLocker.com, Inc., St. Petersburg, Florida, U.S.A.

Printed on acid-free paper.

BookLocker.com, Inc.
2017

First Edition

Training the Female Athlete

**A Scientific Approach To Becoming Strong and Stable
Females Have Limitless Potential!**

**"When they can finally get past the mental barriers
their potential can be limitless."**

Michael K. Butler

B.A.; P.T.A.; CSCS*D; RSCC*D; CSPS

*The Female is Strong and Resilient.
She Just Needs To See and Feel Her Potential!*

Acknowledgements

Special Thanks To:

Susan Butler - Susan is the love of my life, the one that gives me the energy and time to utilize my skills and pursue my dreams. She is my partner in life, and a true humanitarian who shares my dreams in helping the less fortunate not give up!

Sandi Young - Sandi is nothing less than an angel! I can always count on her devoted support and love for what I create and perform, whether it's riding my bike for kids' cancer or trying to help a less fortunate athlete fulfill her dreams.

Kaelyn Brock - Kaelyn is an amazing female athlete who, through my guidance and her perseverance, has performed some epic lifts in the gym, and I believe she is a true ambassador for how a female athlete should train.

Kate Stenmoen - Kate is another extraordinary female athlete who set many weight lifting records in my facility and has devoted her personal time to helping me with the photos in this book.

Joe Stemmer - For being my photographer and taking such magnificent photos.

Angela Hoy and **Todd Engel**- For lending their expertise from BookLocker.

Karen Brown - For spending countless hours editing and refining my book.

A Professional Thanks to the Following People Who Have Been a Big Part of My Education:

Paul Chek, Gray Cook, Charles Poliquin, Dr. Greg Rose, Dave Phillips, Dr P. Michael Leahy, Janet Alexander and Chris Maund.

LIFETIME GRATITUDE- To my long-time mentor, John R. Wooden, whose life experiences and teachings have inspired me to give my best every day and to live and love life to the fullest.

Disclaimer

This book details the author's personal experiences with and opinions about Training the Female Athlete. The author is not a healthcare provider.

The author and publisher are providing this book and its contents on an “as is” basis and make no representations or warranties of any kind with respect to this book or its contents. The author and publisher disclaim all such representations and warranties including, for example, warranties of merchantability and healthcare for a particular purpose. In addition, the author and publisher do not represent or warrant that the information accessible via this book is accurate, complete or current.

The statements made about products and services have not been evaluated by the U.S. Food and Drug Administration. They are not intended to diagnose, treat, cure, or prevent any condition or disease. Please consult with your own physician or healthcare specialist regarding the suggestions and recommendations made in this book.

Except as specifically stated in this book, neither the author or publisher, nor any authors, contributors, or other representatives will be liable for damages arising out of or in connection with the use of this book. This is a comprehensive limitation of liability that applies to all damages of any kind, including (without limitation) compensatory; direct, indirect or consequential damages; loss of data, income or profit; loss of or damage to property and claims of third parties.

You understand that this book is not intended as a substitute for consultation with a licensed healthcare practitioner, such as your physician. Before you begin any healthcare program, or change your lifestyle in any way, you will consult your physician or other licensed healthcare practitioner to ensure that you are in good health and that the examples contained in this book will not harm you.

This book provides content related to topics of physical and/or mental health issues. As such, use of this book implies your acceptance of this disclaimer.

TABLE OF CONTENTS

FOREWARD	xi
Introduction	1
Chapter 1: <i>Understanding the Female: Considerations Before Training</i>	3
Chapter 2: <i>Understanding the Physical Difference Between the Male and Female</i>	5
Chapter 3: <i>The Female Triad: A Coach's Worst Nightmare</i>	7
Chapter 4: <i>Tips for Female Athletes</i>	11
Chapter 5: <i>Understanding Hormones and the Menstrual Cycle</i>	13
Chapter 6: <i>How the Menstrual Cycle Affects Exercise</i>	15
Chapter 7: <i>The Q Angle</i>	19
Chapter 8: <i>Postural Considerations Before Training</i>	21
Chapter 9: <i>The Anterior Cruciate Ligament: A Real Need for Concern for the Female Athlete</i>	23
Chapter 10: <i>The Power of Good Coaching: Bringing Out the Beast in Her!</i>	33
Chapter 11: <i>How to Train a Female to Get Strong: The Secrets Behind Effective Training</i>	37
Chapter 12: <i>Power Development: Asking Her to Step Out of Her Comfort Zone</i>	43
Chapter 13: <i>What About Senior Female Athletes?</i>	57
Chapter 14: <i>My Favorite Exercises for the Female Athlete</i>	59
Chapter 15: <i>The Best Competitive Exercise for Big Athletic Gains</i>	73
Chapter 16: <i>How Much is Too Much?</i>	77
Chapter 17: <i>Why Using Scientifically Designed Programs is the Missing Link in an Athlete's Portfolio</i> ...	79
Chapter 18: <i>Cardio vs Strength Training: A Female's Dilemma</i>	85
Chapter 19: <i>Boot Camps for Female Athletes</i>	89
Chapter 20: <i>Three Big Mistakes Female Athletes Make in Gyms!</i>	93
Chapter 21: <i>To Roll or Not to Roll: Everyone's Favorite Painful Tool!</i>	95
Chapter 22: <i>Should Females Train Differently Than Males?</i>	97
Chapter 23: <i>Getting Along in the Gym: What You Need to Know to Survive, Ladies!</i>	99
Chapter 24: <i>The Squat: The Need to Go Deep! Is it A Concern for Females?</i>	103
Chapter 25: <i>Two Training Myths: What You Should Know!</i>	107
Chapter 26: <i>Injury Prevention Concepts</i>	109
Chapter 27: <i>Multiple Sport Athletes Reduce the Risk of Injury: True or False?</i>	111
Chapter 28: <i>How to Build Confidence in the Female Athlete to Get the Most Out of Her Potential</i>	113
Chapter 29: <i>Menopause: Training Concerns and Strength Training Benefits</i>	115
Chapter 30: <i>Dynamic Stretching vs Static Stretching: Which is Better?</i>	119
Chapter 31: <i>The Mental Game: Do Women Have The Edge?</i>	121
Chapter 32: <i>Importance of Sleep and How it Affects Sports Performance</i>	125
Chapter 33: <i>Hydration is Key to Power</i>	129
Chapter 34: <i>Essential Nutrition for the Female Athlete</i>	131
Chapter 35: <i>Eccentric vs Concentric Training: What You Need to Know!</i>	137
Chapter 36: <i>Using a Heart Rate Monitor</i>	139
Chapter 37: <i>Did You Know? A Look at What Powerful Females Have Done</i>	141
Chapter 38: <i>Questions and Answers</i>	143
Conclusion	145

THE AUTHOR'S FINAL WORDS.....147
REFERENCES.....149

Chapter 2:
Understanding the Physical Difference
Between the Male and Female

When it comes to training a female athlete we must first understand the difference between her and her male counterpart so that we can appreciate who we are training. We also need to appreciate when we write a program or a periodization plan for a female that alignment of their structure is crucial to note when training. The following are some interesting differences between the male and female:

1. On average, a male is both taller (about 15 cm) and heavier (about 15%) than the average female.
2. Men have larger hearts and lungs, and their higher levels of testosterone cause them to produce greater amounts of red blood cells.
3. Women generally have a greater body fat percentage than men.
4. Men and women have different levels of certain hormones. As an example, men have higher concentrations of androgens such as testosterone, while women have higher concentrations of estrogen.
5. A woman's pelvis is larger than a male's which predisposes them to knee problems.
6. On average a male has a larger waist in comparison to their hips than women.
7. Males in general have denser, stronger bones, tendons and ligaments.
8. Females in general have lower total muscle mass than males.
9. Males convert more of their caloric intake into muscle and expendable circulating energy while females convert more into fat deposits.
10. Gross measures of body strength suggest that women are approximately 50-60% as strong as males in the upper body, and 60-70% in the lower body.
11. Greater muscle mass is reported due to a greater capacity for muscle hypertrophy because of higher levels of circulating testosterone for males.
12. Men have significantly higher hand grip strength than females, even when comparing untrained men with female athletes.

Chapter 6: ***How the Menstrual Cycle Affects Exercise***

Because patterns of hormonal changes differ from woman to woman, it is essential to have a consultation with the athlete to individualize the program.

It has been my experience that when compared to their male counterparts the female appears to be more flexible. With this in mind, ligaments and the supporting tissues are more lax during this time due to fluctuations of the female hormones estrogen, progesterone and relaxin (Hewett 2000). One must take this into consideration by testing each female athlete and then make the appropriate changes when their time of the month comes.

There is a nine-point flexibility test to determine systematically how flexible a female is (Rocobado 1990), with each test resulting in one point if performed successfully.

- a. Thumbs to touch inside wrist - 1 point for each thumb that touches wrist.
- b. Bend little finger back as far back enough to create a 90-degree angle between your finger and hand – 1 point for each finger.
- c. Hyperextend your elbow 10 degrees or more -1 point for each elbow.
- d. Hyperextend your knee 10 degrees or more - 1 point for each knee.
- e. Bend forward without bending your knees and place your palms of both hands flat on the ground - 1 point.

Scoring the test:

- Zone 0-2 - Hypomobile (reduced flexibility). Need to stretch as much as possible.
- Zone 3-4 - Pay attention to which joints are loose. Your sport may result in you having an injury if you force that joint through excess ranges of motion.
- Zone 5-9 - Hypermobile (excessive flexibility). Scoring in this zone requires you to participate in a high resistance training program with reduces range of motion. No stretching required.

There have been many studies done regarding injuries for female athletes during menstruation, and there are a few that caught my attention. The anterior cruciate ligament (ACL) is of heightened concern and seems to be at high risk during menstruation. Sports like soccer and volleyball seem to be two sports that place a female athlete at high risk during these times due to the nature of the sports involving cutting, jumping, landing, etc.

Most of the literature brought forth from long case studies showed the likelihood of an ACL knee injury does not remain constant during the menstrual cycle. Instead the risk of an ACL disruption is greater during the pre-ovulatory phase of the menstrual cycle than the post-ovulatory phase (Wojtys et al 2014). He used self-reported menstrual history data to characterize a participant's menstrual status at the time of injury and demonstrated a greater incidence of non-contact ACL injuries among women athletes during the pre-

ovulatory phase. In a subsequent study, Wojtys et al used urine levels of estrogen, progesterone and leutinizing hormone metabolites to characterize a participant's menstrual status at the time of injury. The incidence of ACL injuries was highest during days 9-14 of a 28-day cycle, and lower during the post-ovulatory phase (defined as day 15 to the end of the cycle). Arendt et al reported that female athletes were at higher risk of ACL injury during the pre-ovulatory phase when compared to the post-ovulatory phase. Similarly, Slauterbeck et al noted that a disproportionately greater number of ACL injuries occurred during pre-ovulatory phase, and that fewer injuries occurred as the cycle progressed.

The direction female athletes need to take during menstruation depends on what education or coaching they get from their trainer/coach. Not many consider a female athlete's state of physical/mental well-being for that time of the month unless the athlete comes forth and mentions that they are having female issues.

As indicated by the above literature, it is important to test each athlete in terms of how flexible and/or how strong they are. We must look at their posture, anatomical alignment, body shape, attitude, mental focus, nutrition and sleep patterns during this time, as they all play a key role in preventing unnecessary injuries.

So what type of training is required or considered during menstruation?

- Core programs that require spinal stability and low load on the spine should be performed during menstruation. This should be emphasized at mid-cycle and just before menses.
- There has been much research showing that lower abdominal training and understanding of their function was imperative. Because the sacroiliac joint can be injured during loading exercises, contracting the transversus abdominus decreased the laxity around this joint. Sumo deadlifts should replace conventional deadlifts just around menses (Richardson et al 2002).
- High-energy circuit workouts are advised right before or during menses if athlete suffers from PMS. High levels of progesterone can cause fluid retention and bloating so muscle activity is important for reducing fluid retention.
- Push vs pull/upper vs lower body exercises are good combinations to use during menses. Watch that the athlete doesn't get drained from activity. Keep energy up with long rest periods if working on power development.

Program design example for female volleyball athlete who is hypermobile during menses:

Strength/endurance phase (warm-up with the sled/no weight 3 x 20 yards). Do full dynamic warm-ups/no stretching afterwards.

Exercise	Reps	Sets	Intensity	Rest
Sumo Deadlifts	10-12	3-4	-1 rep	2 min
Standing Cable Chest Press	10-12	3-4	-1 rep	2 min
Bent Over Row	10-12	3-4	-1 rep	↑→↑
Multi-Directional Lunge with Overhead Bar Hold	6 each	3-4	-1 rep	2 min
Supine Single Leg Bridge	8-10-	3-4	Bodyweight	1 min
Hanging Lower Abdominals	8-10	3-4	Bodyweight	1 min

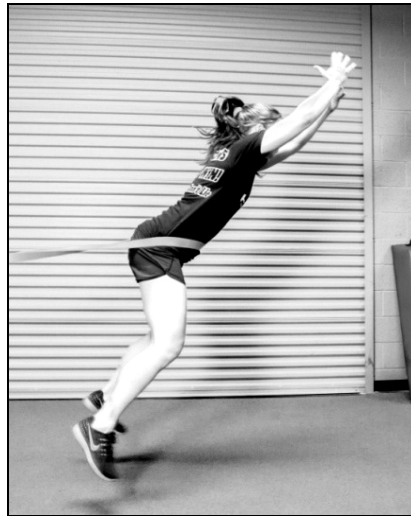
Program design for female soccer player who is going through menses with severe cramping or is injured - quite often super tight!

Exercise	Reps	Sets	Intensity
Elliptical Trainer	xxx	1	15-20 min
Dynamic Warm-ups	20 yards ea	1	15 min
Muscle Activation with Bands	15 yards ea	1	10 min
Active Release Techniques	xxx	1	All major muscle groups/problem areas

My recommendations are to spend her time stretching major muscle groups, performing Active Release Therapy, but also doing an active warm-up series of movements. No weightlifting/heavy exercise due to cramping/bloating/bleeding.

It is my suggestion that due to the complexity of each female athlete and the variance between each one as to how they feel mentally, physically, and emotionally during menstruation, coaches and trainers need to be educated regarding the menstrual cycle, so that they can learn to monitor exercise programs so as to avoid potential injury situations due to hormonal fluctuations.

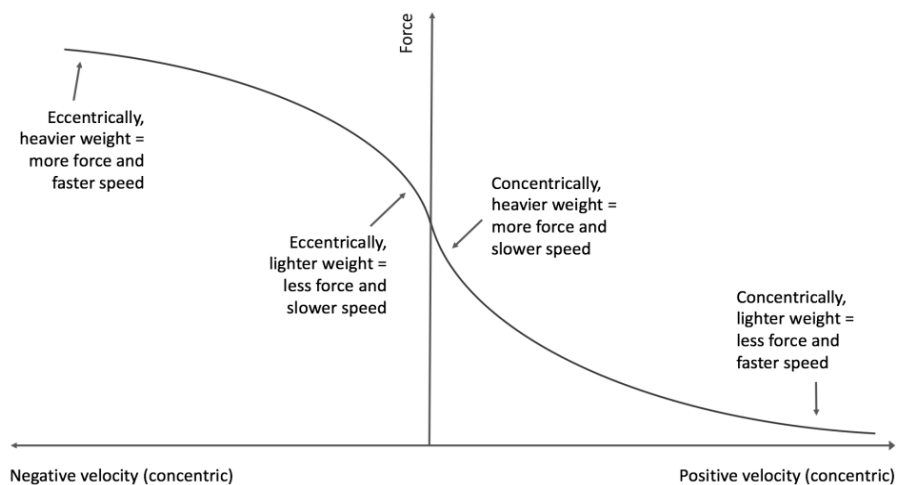
Chapter 12:
Power Development:
Asking Her to Step Out of Her Comfort Zone



In today's sports world athletes are bigger, stronger and faster than ever before. There is so much more available on the market today regarding scientific information and equipment to produce explosive power.

What is power? Power is defined as the product of force (in newtons) and velocity (in meters per second). The ability to produce a high power output is very important for many sports.

Power can be developed using many different training methods, including Olympic lifting, resistance training, plyometrics and sprinting.



The Force-Velocity Relationship

Power is affected by the force-velocity relationship, which describes the inverse relationship between the force that a muscle can produce and its contraction velocity during the same muscle action. The force-velocity relationship is thought to be the single most important factor in determining the force that can be produced in a given muscle action.

Since the force-velocity relationship is negative (when muscles are shortening), this means that the greater the external load, the lower the contraction velocity. At low velocities, the rate of change of force is very high and it drops off quickly with small increments of speed. At higher velocities the rate of change of force is quite low and alters little with each incremental change of speed.

IMPORTANCE OF POWER

History has shown that power is the single most important factor in the development of athletic performance than either strength or size because it is the one indication of the ability to produce force quickly.

Additionally, some researchers have found correlations between the ability to produce high power outputs and specific measures of athletic performance (e.g. Sleivert et al. 2004).

Some of the female athletes that I have come across don't know how to produce power. It takes time and discipline to get to the point where you can feel the power being produced. Most athletes do not accelerate the bar fast enough (like in the hang clean) to elicit an effect.

I like to use the Tendo unit as a biofeedback device to show the athlete if she is producing enough speed throughout the movement or not. Also, the weight needs to be light enough so that the athlete can move the bar with speed. I usually start with 50% of their 1RM, and no higher than 60%, because then you are working on another component: strength vs power. The advantage of using a Tendo unit is both the visual and auditory feedback that they will be given.

If the athlete is having a difficult time moving the bar quickly, then breaking the exercise down into smaller components might be necessary. For example, if she can't do a power clean quickly, then break that down to a hang clean or jump shrug, and then retest.

THE POWER CLEAN

With female athletes it's important to ensure they understand feeling the transfer of energy from one segment to the next, as when you are teaching the power clean. I have witnessed many athletes not extending the hips during a clean move, because they are so caught up in getting the weight onto their shoulders that they end up flipping the bar by over using their shoulders, losing the benefit of the exercise.



The Starting Position of The Power Clean

The power clean is one of the best exercises to develop athletic power and speed. Since it takes a lot to perform a well-executed power clean coaches like to break the exercise down into 4 phases. The first is **The First Pull**, pulling the bar off from the floor to just above the knees. This part is done slowly not explosively like a lot of lifters think. You want to be deliberate but watch the tempo. Make sure your back is straight, chest is expanded, eyes are looking straight ahead and elbows are locked with weight shifted towards the heels.



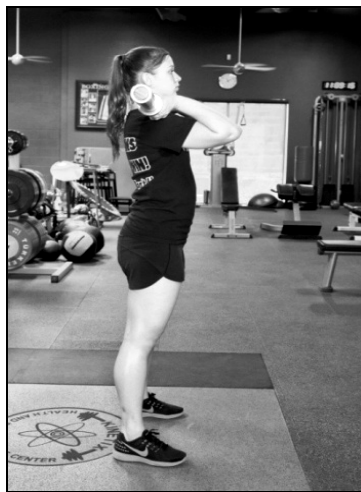
Pull the bar off the floor to the knees

The second part is called the **Transition Phase**, which is very brief but it is very important to do this right. Keep looking straight ahead with your lower back kept in a neutral, slight curved position. Your arms are straight and your shoulders are directly over the bar. Continue pulling upward until the bar is at mid-level of your thigh. With the weight on your heels prepare to aggressively push back against the ground and extend the hips as if attempting to jump forcefully into the air.



Pulling the hips forward and shrugging the shoulders
(Note that she isn't totally extended because the heels should be off the floor.)

The next phase is called the **Second Pull**, which is very fast and explosive. Once the bar passes mid-thigh, it's an all out explosive pull best described as a "jump and shrug" motion. When done right the bar for a split second feels weightless.



Note the catch position (elbows up).

The next phase is the **Catch Phase**. As the bar approaches maximum height, quickly pull your body underneath it, landing solidly in a half-squat position, still looking straight ahead. At the same time rotate your elbows forward and under the bar, allowing your grip on the bar to loosen as your wrists turn upward, and catch the bar on the front of your shoulders.



This is a power clean with a squat.
Notice the catch position and the wrists.

This is an excellent exercise to teach explosion, acceleration and dropping under the bar with conviction. Within a few weeks you can really increase the weight on the bar. It is imperative to have sound mechanics before going heavy. Bad form equals poor performance.

THE SNATCH

USA weightlifting teaches progressions for each exercise to make the learning curve easier for the athlete, and it makes fundamental sense. Some strength coaches like to teach the snatch first as it seems simple to learn by throwing the elbows out with arms extended at the top. My problem with that is the athlete hasn't learned the bend pattern yet, or hasn't developed their core enough for spinal support. Asking an athlete to start with throwing a bar overhead without much of a learning curve yet seems like rushing to build power.

Starting with an overhead squat and analyzing the movement would be a smart first step.



What's most important about having weight above your head is learning how to miss correctly. That is, once you have received the bar from overhead with elbows extended and locked, simply guide the bar back to the platform by taking a step back and allowing the bar to fall forward. If you lose it from behind, jumping forward with arms extended almost looks like a dislocated position of the shoulders. You can practice this with a stick first and then graduate to a 15# bar before going with the standard 45# bar.

The snatch is easiest learned in segments, and from the top and working down. Ideally this is done on pulling blocks. If you don't have blocks you can start in the hang position at the knees.



The snatch from the hang position

Learning the explosive second pull keeps a beginner's focus on this simple muscular action executed at maximal speed. Just like the clean, the bar is pulled in a straight line, as the hips, knees and ankles extend fully and with purpose. The elbows bend as the shoulders shrug, and then learning how to drop under the bar with arms fully extend overhead is the final step. When done correctly a lifter can support very heavy weight overhead. This is why a strong core and back muscles need to be developed first.

The snatch is a very explosive move to learn with a very high correlation to sports. Whatever progression you start with, whether it is the clean or the snatch, progressions are very important to ensure the female athlete learns each sequence correctly.

The following is a pattern of progressions to learn proper sequencing in weight lifting and Olympic lifts. The information gathered is from years of training and research by some of the finest strength coaches in the world. The sequence has changed some, but it is my experience that the order presented is the best way to teach young lifters. First and foremost at least an FMS (functional movement screen) should be done before any lifts are performed. If an athlete can not pass the straight leg raise test they shouldn't be squatting, due to lack of hip mobility or core strength. Another indication that an athlete shouldn't squat just yet is if they can't touch their toes.

1. Front squat
2. Back squat
3. Overhead squat. Teach from top to bottom and from bottom to top
4. Military press
5. Push Jerk
6. Deadlift from above the knees, at the knees, below the knees, to the floor
7. Hang Clean above the knees, at the knees, below the knees
8. Power Clean from the floor
9. Clean and jerk
10. Snatch above the knees, at the knees, below the knees
11. Snatch jerk
12. Power Snatch from the floor

Again, some of these exercises can be learned in different sequences, but it all comes down to how the female athlete is learning and executing with good form. The front squat is crucial for most athletes as it switches the focus to the posterior chain, especially the thoracic (upper spine muscles) for improved posture. If racking the bar with elbows up and wrists bent backwards doesn't feel good, you can either use straps around the bar, or use the cambered bar with front handles. In either circumstance, this is the single most imperative exercise to start with as it teaches and trains the athlete to rack the bar correctly, works on the posterior chain and builds a strong abdominal wall in addition to strong legs.

Looking down the order of exercises you will notice it follows a pattern of easiest to most difficult, and from least amount of difficulty to very precise movements where the difficulty multiplies. Again, the specific sport will determine where you start. A volleyball player, for instance, will cover every exercise on this sheet at one time or another, since the sport is played from the ground all the way to overhead. Soccer primarily uses the lower body, so snatches won't be as important as front squats.

THE BROAD JUMP

This is an explosive exercise that has horizontal resistance to overload the athlete.



Start of Broad Jump



Take Off



Landing

KNEELING CHEST PASS FROM THE FLOOR

The kneeling chest pass is a more athletic variation of the bench press due to all the body parts being utilized. It's good to perform a chest exercise with weight and then do this exercise for power development.



Start



Thrust Forward



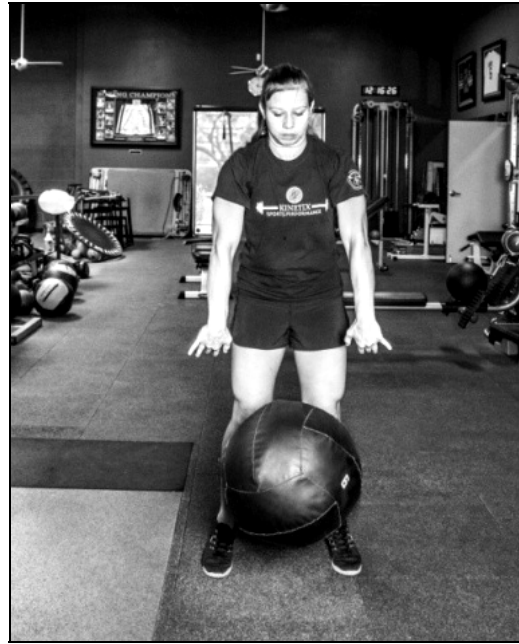
Landing

BALL SLAMS WITH ROTATIONAL THROW

A very explosive full body exercise that demands focus and feel.



Ball Slam Start



Finish



Rotational Ball Throw Start



Finish

CORE EXERCISES

These exercises are great for sequencing movement patterns. There are many progressions for each exercise. The core is involved with stabilizing the spine as the extremities are moving.



Kneeling opposite arm and leg (start)



Kneeling opposite arm and leg (finish)



Bridging (start)



Bridging (finish)

LOWER ABDOMINAL MARCHING

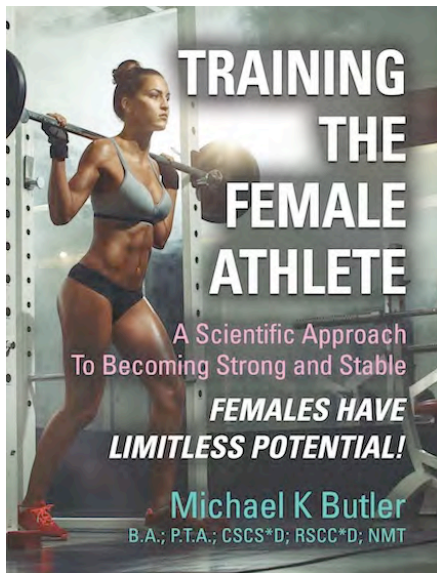
This exercise is great for the lower abdominals, as it trains the athlete to keep a neutral spine and drawn in belly button. The further out the legs go the more difficult the exercise.



Start



Finish



A powerful in depth approach to training female athletes.

TRAINING THE FEMALE ATHLETE: A Scientific Approach to Becoming Strong and Stable - Females Have Limitless Potential!

by Michael K Butler B.A.; P.T.A.; CSCS*D; RSCC*D; NMT

Order the complete book from the publisher

[Booklocker.com](http://www.booklocker.com)

<http://www.booklocker.com/p/books/9053.html?s=pdf>

**or from your favorite neighborhood
or online bookstore.**