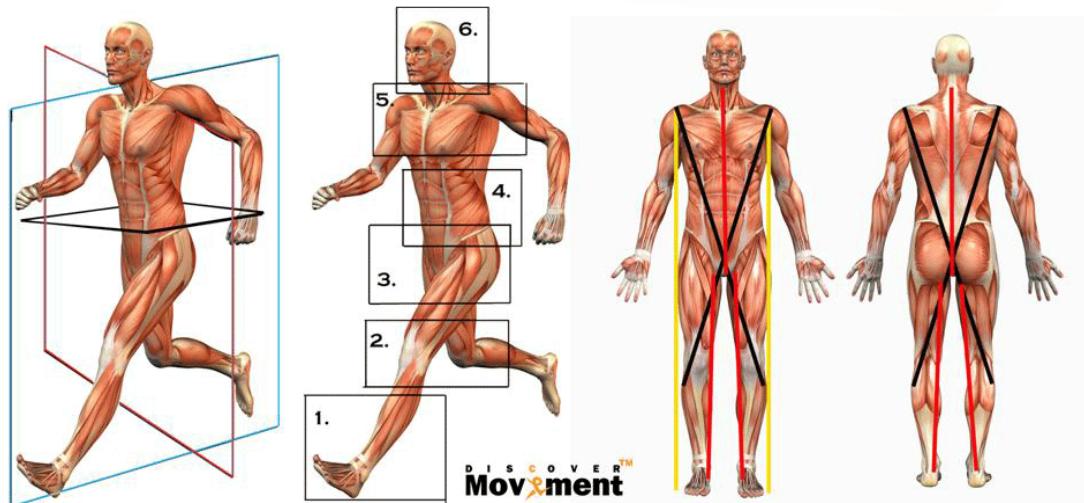


Discover a breakthrough in performance by optimizing the first 10 minutes of your training session!

The Warm-Up Method -report
for
Coaches and Athletes

by

368 Training Systems - Building the Optimal Athlete



Please feel free to share this report with the coaches and athletes you know!

FOREWORD

You have permission to print this article free of charge, as long as the author bylines are included. Feel free to share ***The Warm-up Method -report*** with anyone you know. It is intended to be an educational tool that can help condition an athlete the most optimal way possible. It is our goal to help you to your best performance yet. With that said, it is up to you to help spread the word and to also help others get the same athletic experience.

The Warm-Up Method will move your body in a variety of different movement patterns that will help you elevate your acute performance as well as to absorb the given training stimulations optimally.

Discover Movement LLC assumes NO LIABILITY due to any actions undertaken as a result of reading this report.

CAUTION:

Always consult a physician before starting an exercise program

Complete a thorough warm-up before embarking on your workout

Always finish your workout with a cool-down session

It is imperative that one follows proper progressions and does not rush into anything that they cannot do without control.

TRAINING SAFETY

Exercise in a pain-free fashion, if it hurts don't do it.

Move with deliberate control. Make all of your movements smooth and coordinated.

Please feel free to share this report with the coaches and athletes you know!

ABOUT THE AUTHOR

Tommi Paavola, M.S. C.S.C.S.



- Certified Strength and Conditioning Coach by NSCA
- Specializes in Youth Conditioning and Athletic Development
- Master Trainer and consultant for the Finnish Coaching Association
- Created the *Movement Skill Training Program* used by over 2000 coaches
- Created 368 –Training Systems for Athletic Development

Dear Friend,

I am a personal trainer, a conditioning coach and a physical education teacher but more importantly, I am a life-time student of my field of passion and someone who has always been fascinated by the dynamic miracle of human movement.

So much about our movement system is still unknown. However, new findings and breakthroughs have greatly improved our chances in creating better training systems and thus, better results in function and performance whether in Olympic arena or in the “backyard stadiums.”

The content of this report has helped me tremendously in developing athleticism, improving acute/long-term performance and in decreasing injuries. My goal is that you would find these ideas, techniques and systems useful in creating the most optimal training environment for yourself or your athletes.

Thank you very much for taking time to read this report.

Tommi Paavola

CONTACT INFORMATION

DISCOVER MOVEMENT

Phone: 1-201-677-8885

tommi.paavola@discovermovement.com

www.discovermovement.com

Please feel free to share this report with the coaches and athletes you know!

TABLE OF CONTENTS

1. “Traditional” vs. the “New Warm-up”

2. 368 – Simple System of Human Movement

- a) Three planes
- b) Six stations
- c) Eight chains

3. “Turning on” the systems

- a) Cardio-vascular
- b) Neurological
- c) Muscular (+ fascia)
- d) Metabolic/hormonal
- e) Mental/psychological

4. WARM-UP: Invaluable practice time for fundamental skills

5. Sport specific warm-up and activation

6. 32 Scientific “warm-up studies” to prove the point

7. DISCOVER MOVEMENT Dynamic Warm-up Method

- The optimal sequence of the warm-up exercises

Please feel free to share this report with the coaches and athletes you know!

1. Traditional vs. the New Warm-up

Anyone who has been involved in sports has some kind of mental association with warming up.

My memories are mostly about running around the field and sitting down on the ground afterwards for some static stretches. The stretches were always the same, the hurdler-stretch and other reach-down movements. Generally speaking, I remember my youth sport **warm-ups being boring, inefficient and not stimulating** for the mind or the body. It was just something we had to do. In fact I believe now that the term “warm-up” is outdated as the pre-sport or pre-workout activity is about so much more than just “warming up.”

Active and dynamic warm-ups and movement preparation routines are replacing the old mentally and physically more passive warming up practices. The general idea of (just) elevating the body temperature by slow jogging followed by a few static stretches is being revolutionized by a more focused and involved movement preparation.

An athlete spends between 10-20 minutes a day preparing the body for the competition or practice. This time accumulates slowly but surely and functions not only as a **primer for the sport** performance but as an **opportunity to learn and develop** various motor skills.

The activation of the movement system correctly prior to sport performance or practice has been found crucially important. Discover Movement has been researching and developing optimal warm-up and movement preparation protocols for years.

Preparing the movement system for activity	“Old Warm-up”	Active warm-up
1. Elevating the core temperature	Yes	Yes
2. Optimizing the muscle elasticity (dynamic SSC)	No	Yes
3. Activating the stabilizer muscles	No	Yes
4. Activating the prime mover muscles	No	Yes
5. Stimulation of proprioception and motor skills	No	Yes
6. Activating and focusing the mind	Partly	Yes
7. Movement Skill practice	No	Yes

Table 1: Comparison of the acute adaptation: “Traditional” vs. Active warm-up

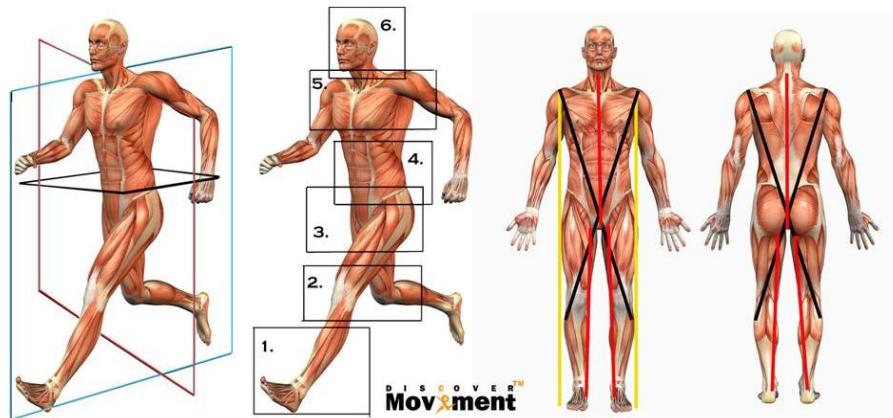
Please feel free to share this report with the coaches and athletes you know!

2. 368 – The simple system of human movement

In order to re-produce a great warm-up that really works, we need some sort of a system. Without a pattern or a system, all of our warm-ups will be random and we will never be able to predict the outcome of the warm-up reliably.

The Discover Movement Warm-Up Method aims at creating the desired physiological adaptation as reliable as possible every time. Our simplified concept of human movement helps us in approaching the warm-up systematically and comprehensively. This concept is called **368**.

3 planes - 6 stations – 8 chains



The 368-system gives a simplified biomechanical idea of human anatomy in relation to integrated movement. Learning more than 700 muscles with their functions in relation to everyday training seems like an impossible task for most of us. That is why observing the body in the following way can be helpful:

3 PLANES: The movement occurs in three planes, sagittal, frontal and transverse. In lame terms this translates into forward/backward, side to side and rotational movement.

6 STATIONS: The human body can be described in six levels or stations:

1. Foot and ankle
2. Knee
3. Hip
4. Lumbar spine
5. Thoracic spine
6. Cervical spine (*1)

Please feel free to share this report with the coaches and athletes you know!

8 CHAINS: The muscles and fascial components together form functional units that translate movement throughout the body and are structurally connected making the whole body into “one big muscle”. These chains are the front chain, back chain, lateral chains on the sides and the diagonal chains in the front and in the back. (*2)

The 368-concept helps us executing the warm-up systematically as well as in observing the movement in real-time. **And how does the 368 actually do this?**



1. By reminding us to warm-up and **activate the body in all three planes** as all of the sports and activities occur in multi-planar environment.
2. By making sure that **each of the body parts** have been “checked” and “turned on” the right way.
3. By guiding us in terms of **movement patterns** instead of individual muscles.

3. “Turning on” the body-wide systems in the warm-up

Cardiovascular System

One of the main goals of warm up in sport practice has always been “to increase the core temperature”. That is what “warming up” sounds like anyway. Many functions of the body operate better as the internal temperature of the body rises as a result of physical activity. Stimulating the cardio-vascular system is most definitely a part of any warm-up protocol.

Neuromuscular System

The objective of the warm-up is to “start the engines” in terms of neurological and musculoskeletal system as well. This is where the **old school warm-up often falls short** as the optimal muscle activation will most likely not be a result from slow jogging and static stretches. Activating the nervous system means that we will optimize the sequence of how the muscles work together. **Turning on the receptors requires motion.** That is why sitting down to passively stretch your muscles is normally not the best approach to elevating acute performance.

Metabolic/Hormonal system

Different activities call for different approach in warming up. A power lifter might warm up completely differently than a marathon runner. And a rower would certainly not use the same warm-up as a pistol shooter. The intensity level of the warm-up depends on the desired acute response. **The metabolic system and hormone activity can be regulated/stimulated by the nature of the warm-up.**

Mental/Psychological System

The mind has to be stimulated and active starting from the first moment of the warm-up. You can NOT cheat the body into proper adaptation if the mind is not involved and challenged. Whether the warm-up routine is slow or fast by nature the level of focus and concentration correlates directly with the physiological results of the warm-up.

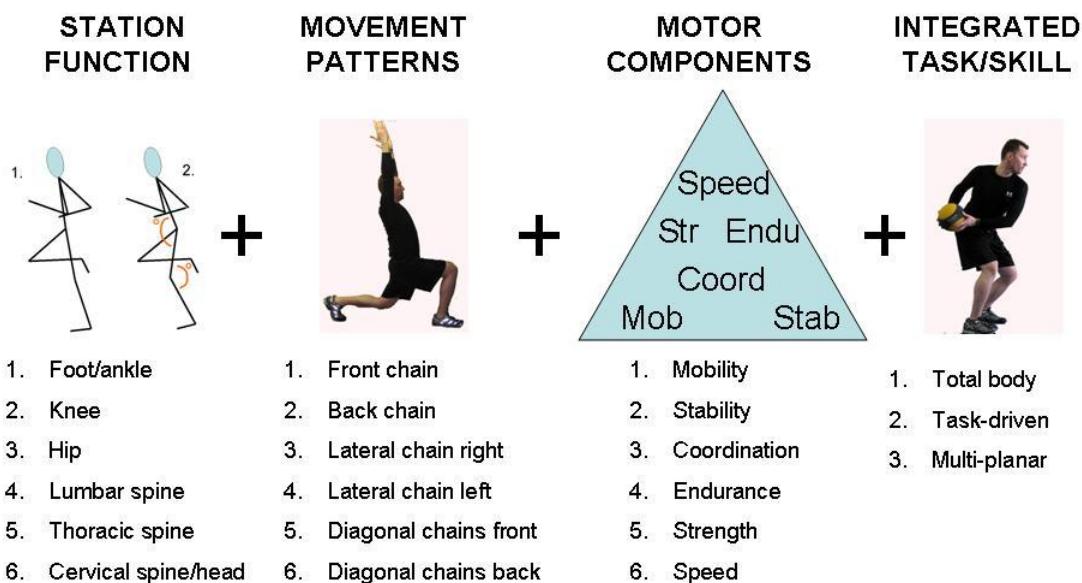
Please feel free to share this report with the coaches and athletes you know!

4. WARM-UP: Invaluable practice time for the fundamentals

Until recently the quality of the warm-up has not been considered an important factor in athlete's development but more or less a necessary protocol that needs to be done in order to start the "real practice." However, this couldn't be further from the truth. The first 10 minutes of the practice could actually become the most important phase in the session. Think about it, not only are you in the **most receiving state to learn and develop skills** but you also **set the tone for everything else done after the warm-up.** It would a waste of time not to take advantage of the warm-up routines that can accumulate to hundreds of hours of training time on a yearly level.

Please, look at the graph below and imagine how much more could be achieved in your warm-up **if all these elements would be in a well structured system** and performed automatically in the beginning of each session. We can easily turn "the least inspiring" phase of the workout into the most exciting and essential component of our training.

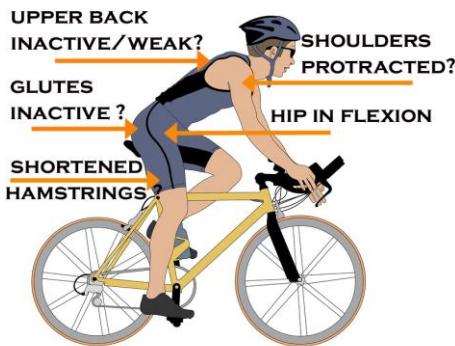
THE WARM-UP SHOULD IMPROVE...



Please feel free to share this report with the coaches and athletes you know!

5. Sport specific warm-up

So how do we prepare the body for a specific activity?



How do we know what movements to include and which stations or chains to concentrate on?

Developing a sport specific warm-up or an activation routine will require at least a basic understanding of the sport movement.

Some sports require more emphasis of postural activation during the warm-up as the others might need

to focus on specific myofascial chains in the body. A cyclist that sits in a “flexed hip”-position could probably use a concentrated effort on making sure that also the back side (read; glutes) would stay active during the ride.



A thrower or a soccer player might have to make sure that especially the diagonal front chain that crosses over the body and the abdominal wall, is active and ready for the rapid stretch-shortening action to occur.

By analyzing the sport movement in terms of **three planes, six stations and eight chains**, the warm-up activation routine is much easier to put into practice.

We also need to **design the warm-up based on the metabolic and systemic requirements of the sport**. For example, a shot put athlete's single performance takes about 2 seconds whereas a triathlete keeps going for hours. We would not want design a warm-up for the shot put athlete that would tire him out and take away from his 100% maximal effort. We also would not want to send a triathlete on his/her way without making sure that the core temperature has been increased to the point where the oxygen uptake and delivery are at their optimal pre-activity level. So, **depending on the dominant energy systems in each sport** we might choose quite different approaches of preparing for the activity.

Please feel free to share this report with the coaches and athletes you know!

Sport specific warm-ups based on the requirements of sport

This table presents an overall idea of the differences in sports and observes a few main elements of human performance and how they would relate to warming up. Explanation of each category is below:

Cardio: This category means the required level of cardiovascular preparedness for the given sport. In other words, how much f. ex. the core temperature influences the performance and how “warm” the athlete would need to be/become for the optimal performance.

Mobility: What and where are mobility requirements for this performance? Can too much mobility give a disadvantage? Does the athlete need f. ex. great shoulder mobility for optimal performance and does it need to be addressed in the warm-up.

Activation: The level of muscular activation and recruitment. Which muscles need to be “woken up” to act effectively as stabilizers and which prime movers need additional pre-performance muscle recruitment? For example the sports that require maximal explosive strength can benefit from additional activation for the big muscle groups. This may not be a fatiguing activity but a short and intense enough for optimal stimulation.

Practice: Specific sport movements are often “practiced” even right before the competition performance. It could be important for the athlete to re-establish the movement pattern and “remind” the neuro-muscular system prior to the sport movement. However, the athlete should only repeat a few perfect repetitions and avoid any fatigue that could compromise the performance.

Table 2: An estimated emphasis on different “warm-up components” in regards to activity

	Cardio	Mobility	Activation	Practice
SHOT PUT - explosive - short duration - fast energy (ATP-CP) - rest btw efforts - 100% recruitment	+	++	+++	+++
MARATHON - continuous - aerobic/anaerobic - long duration - sub-maximal	+++	++	+++	+
SOCCER - speed/endurance - aerobic/anaerobic/ATP - intermittent	+++	++	+++	+++

Please feel free to share this report with the coaches and athletes you know!

6. 32 Warm-up studies to prove the point

Journal of Strength and Conditioning Research published a review called *Effects of Warming up on physical performance; A systematic review with meta-analysis.* (*3)

This review basically searched as many scientific articles as possible that investigated the effects of warming up in humans on performance improvement in physical activity. The results were interesting.

- **92 different warm-up combinations were assessed**
- **79% of the warm-ups improved performance**
- **17% showed a negative impact upon performance**
- **The degree of performance improvement varied from 1% to 20%**

The study revealed quite a few fascinating details that you may want to read yourself. In terms of optimizing the performance it is crucial to think about the conclusions of this study. Why?

- **It is possible to actually decrease performance by warming up**
- **It is clear that not all the warm up protocols are equal (1% vs. 20%)**
- **It is obvious that a correct warm up system can make a BIG difference in sports performance (practice or competition)**

The review discusses some of the problems in the warm-up that decreased performance. Poor protocols did not include movements or activities specific to the performance task or they were too vigorous for example for an explosive performance (vertical jump). Overall, the poor warm-up protocols were inappropriate for the activity.

So what are some of the take-home-message from the scientific reviews?

- 1. Different activities require a different warm-up protocol**
- 2. Sport specific “needs analysis” is important when designing a warm-up**
- 3. Timing, intensity and volume are essential variables to be considered in the warm-up routine**

Please feel free to share this report with the coaches and athletes you know!

368 – Dynamic warm-up activation is now available as a digital product at www.discovermovement.com. You can view videos of different movement progressions and print out workout cards with exercise pictures.

I hope you take advantage of this new resource and allow your athletes to benefit from it.

Please contact me for any questions or comments at www.discovermovement.com or by calling Discover Movement at 201-677-8885

I hope that this report will help you with your pursuit of better function and higher performance whether you are an athlete yourself or a dedicated coach helping others in reaching their true potential.

Sincerely,

Tommi Paavola

Discover Movement LLC.

www.discovermovement.com

References:

- (1*) Boyle, Michael & Cook, Gray. *A joint by joint approach to training.*
- (2*) Myers, Thomas. *Anatomy Trains.*
- (3*) Effects of Warming-up on Physical Performance: A Systematic Review With Meta-analysis Fradkin, Andrea J; Zazryn, Tsharni R; Smoliga, James M. *Journal of Strength and Conditioning Research: January 2010 - Volume 24 - Issue 1 - pp 140-148*
- Chapman, A.E. *Biomechanical Analysis of Fundamental Human Movements.*
- Clark, M.A., "Integrated Flexibility Training".2001.
- Cook, Gray. *The Athletic Body in Balance.* 2003.
- Gray, G. & Tiberio, D, PhD. (2004) Functional Video Digest Series
- Grimshaw, P. *Sport and Exercise Biomechanics.* 2006. Routledge.