

NEEDS ANALYSIS FOR SPORTS

Psychological and
Mental Training

Tactical Training

Technical Training

Physical Training

The Foundation of Success with
The Flexible Periodization Method



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PREFACE

Consider this real scenario: An athlete or fitness client you train has a goal that involves MOVING better. For example, improving the maximal number of pull ups that s/he can perform, throwing a harder baseball pitch or running faster.

- How do you know that the exercises you choose for the training program helps the athlete or fitness client achieve their goal?
- How do you know that the energy system training you suggest is effective for the athlete's or client's goal?
- How do you know which exercises the athlete or fitness client needs to do to prevent overuse injury or traumatic injury?

You **choose** exercises and you **choose** a particular form of energy systems training for the athlete or fitness client. It is impossible to do so without some – conscious or unconscious -- criteria. Even if you choose exercises by rolling a dice, that is a criterion.

- What is the best criterion for choosing exercises and energy systems training for a particular athlete or fitness client?

During his time in university, Karsten learned that the best, most effective and fundamental criterion for choosing exercises and energy systems training is the **needs analysis**.

- What is a needs analysis?

A needs analysis is an “analysis of the needs” that an athlete or fitness client must meet to achieve a stated goal.

At the fundamental level, the needs analysis simply asks the question: **“What does it take to physically dominate the environment?”**

During his continued research of many different resources, Karsten gradually learned a systematic and very effective 6 step process for clarifying what it takes to physically dominate the environment in a particular sport or event.

Karsten has seen this process work so well that in more than one situation he has helped athletes – already at the world class level – to new personal bests within the first year of working with programs that were based on accurate needs analysis created with this process.

In addition to fast results, performing an effective needs analysis provides two major benefits:

- You will experience increased confidence in your communication with athletes and coaches when you discuss the training program.
- You will receive increased respect from athletes and coaches because they understand and see that you are doing the work to truly understand their sport.

Needs Analysis for Sports: *the Foundation of Success with The Flexible Periodization Method* teaches you this proven 6 step process for creating a needs analysis for any sport or activity.

INTRODUCTION

A needs analysis is performed before Step 1 of the 11 Steps of The Flexible Periodization Method; hence the title (see below).

Needs Analysis for Sports: *the Foundation of Success with The Flexible Periodization Method* is a workshop required for the Flexible Periodization Method Specialist for Sport Certification.

Needs Analysis for Sports: the Foundation of Success with The Flexible Periodization Method provides a solid, theoretically-based structure of the needs analysis. However, it is also a very practical manual that provides specific guidance for how to create a needs analysis

Section 1 defines the needs analysis and gives examples of how the Training Factor Pyramid provides an overall understanding of what a needs analysis is. Additionally, eight needs analyses that pertain specifically to strength and conditioning and fitness training are defined.

Section 2 provides fundamental guidelines for how to create a needs analysis and clarifies the often blurry difference between the needs analysis and the assessment.

Section 3 provides the specific 6 step process for creating a needs analysis. It is recommended that you refer back to this section whenever you need to create a needs analysis.

SECTION 1

What is a Needs Analysis?

What does it take to dominate the environment?

When Karsten started working with Danish wrestler Mark O Madsen in 2006, Mark had already won silver in the world championships. One of Mark's stated goals was to improve his ability to lift his opponents off the floor. Previously, Mark had been advised to use Barbell Power Cleans to stimulate strength and power in this movement.

By working on the needs analysis for the movement of lifting an opponent off the floor, Karsten concluded that the pattern could be either a bending pattern (more movement from the hip joint than from the knee joint) or a squat pattern (more movement from the knee joint than from the hip joint).⁽⁴⁾ Following this analysis, barbell power clean could definitely be a relevant exercise.



Photo Courtesy of Das Büro for Team Danmark.

However, the needs analysis also included how the wrestler (Mark) gripped his opponents. To lift the opponent off the floor the wrestler wraps his arms around the opponent ("bear hug") and, with each hand, grips the opposite forearm - somewhat like gripping a fat rope. No chain is stronger than the weakest link and strength, including grip strength, is very specific. The ability to grip an Olympic bar (as in a Power Clean) does not automatically ensure that the wrestler is also strong in this wrestling specific grip.

Karsten decided to use an exercise that would ensure the wrestling specific grip would become as strong as the rest of the wrestler's body. Mark was, at that time, around 75-80 kilos. He was a high priority athlete in the Danish sports system, thus, there was funding to have sandbags of 10-80 kilos made especially for his training.

Mark began the training with the 80 kg sandbag only. With the sandbag on the floor, Mark kneeled down and grabbed it in the exact way that he would grip an opponent. He then stood up and from there mimicked the whole body action he would use to throw his opponents. Mark gradually added the 10kg and the 20kg sandbags to his training. In his next training competition he lifted a 100kg guy off the floor for the first time. His other main lower body exercise was Deep Barbell Front Squats with added elastic bands to allow him to lift explosively without the bar flying off his shoulders.

The point of this story: **how a thorough needs analysis brought the need for specialized grip strength to light** and the dramatic results that were achieved emphasized for Karsten that the needs analysis really is the foundation for effective training programs.

Overall the needs analysis identifies:

- the movement patterns of the activity
- the conditions during which they are
- common injury sites
- relative contribution of energy systems

executed

Without knowing which movements are relevant, it is not possible to choose the right exercises. Without knowing the relative contribution of energy systems it is not possible to design the right interval combinations.

1.1 How the Training Factor Pyramid provides an overall understanding of the needs analysis

In some circles the needs analysis answers the question, “*What is needed to survive the environment?*”

“What is needed to DOMINATE the environment?” is a slightly more positive way to phrase the above question.

What is the “what” in the above question?

The “what” in the above question refers to **physiological, tactical, technical and physical abilities**.

Why? Performance in a given sport or event – for example a 400m race or golf - depends on psychological, tactical, technical and physical factors.

The Training Factors Pyramid is a very rough model to understand the relationship between the psychological, tactical, technical and physical factors.⁽¹⁾



Figure 1.1-1: The Training Factors Pyramid ⁽¹⁾

The Training Factors Pyramid shows how performance in sports depends on physical factors, technical factors, tactical factors and psychological and mental factors.

The psychological and mental training are placed at the top of the pyramid to emphasize that without proper use of the psychological and mental faculties an athlete will not be able to properly express his or her tactical, technical or physical abilities during competition.

Example: An athlete possesses a high level of physical abilities (strength, power and endurance). The athlete also has great technical skill and performs extremely well during practice. However, during competition this athlete tends to get nervous and often performs at a lower level compared to practice.

Psychological and mental factors are not only important at the top of the pyramid. Proper use of the psychological and mental faculties strongly affect physical training, technical training and tactical training. (E.g.: Through focus and self-image.)⁽⁵⁻¹¹⁾ In essence, **strength and conditioning and fitness training are mental events with physical outcomes.**

Why is physical training placed in the bottom of the pyramid?

There are three main reasons why “physical training” is at the bottom of the pyramid:

1. Certain levels of physical ability might be needed to perform the desired technical movement.

Example: While almost any person could perform a tennis serve at SOME level, it is not possible to perform a basketball dunk unless the athlete or fitness client has significant jumping ability and can raise his or her center of gravity high enough to bring the hand, with the ball under control, at a level above the rim of the basketball net.

2. Certain levels of physical ability might be needed to perform the desired or needed amount of repetitions during technical (sports) training WITHOUT INJURY.

Example: In rowing, injuries are primarily overuse related. The knee, lumbar spine and ribs are most commonly affected. The injury incidence is directly related to the volume of training and technique.⁽²⁾

Example: During his time with the Danish sport system Karsten saw many teenage athletes acquiring overuse injuries in their first year of training in the national training centre because the volume of their sport training doubled or, in some cases, tripled.

3. Certain levels of physical abilities might be needed to perform the desired or needed amounts of technical repetitions WITH SUFFICIENT QUALITY.

Example: High strength levels delay the onset of fatigue during a practice, thus allowing an athlete/client more quality repetitions.⁽³⁾ During his work with the Danish sport system Karsten had the opportunity to work with the Danish National Badminton Team, one of the best teams in the world. The most common type 1 goal, expressed by the Head Coach and the players, was the ability to be able to train a higher number of hours per week with maximal quality.

NOTE: For more information on Type 1 goals, see [Are You Programs H.I.P?: How to Create Holistic, Individualized, Training Programs.](#)

The understanding that high levels of strength affect the ability to perform a single movement (the dunk) as well as the ability to REPEAT quality movements (see the example above) has strong implications when the need for strength is assessed.

In some literature, force-time curves are shown to argue that maximal strength or further increases in maximal strength will not benefit performance, as the duration of the performance movement is shorter than the time it takes to produce maximal strength.

This is a simplified argument that does not take into account the actual benefits of maximal strength on the ability to perform multiple repetitions. In addition to the above points it is also discussed in [Periodization Simplified: How to Use The Flexible Periodization Method on the Fly](#) that the benefit of training for maximal strength is not only the actual strength levels but also the associated neural adaptations.

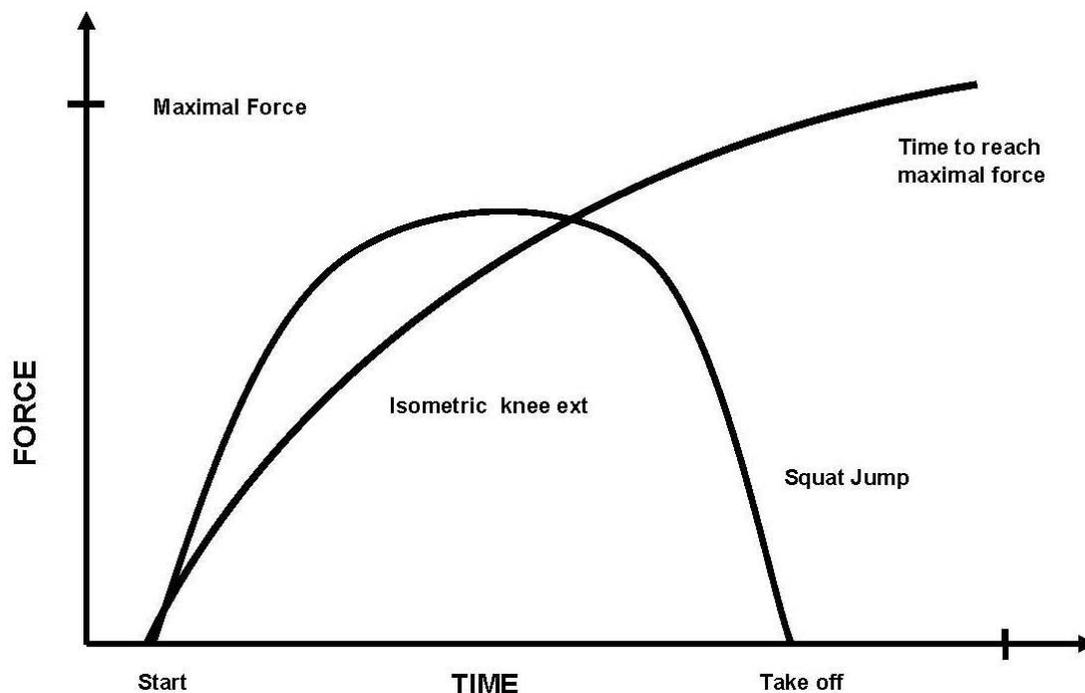


Figure 1.1-2: In some literature it is argued that if the time to produce force in a sport, such as a squat jump, is shorter than the time it takes to produce maximal force then there is a reduced need for maximal strength. However, as explained above, that argument is too simplified.

Why is technical training the second level in the pyramid?

The technical training is the second level of the pyramid because the ability to perform the technical training is based on the physical abilities developed in the physical training. The above examples that explained why the physical training is the bottom of the pyramid, by the same token, explain why and how the ability to perform technical practice is based on the physical abilities.

Why is tactical training the third level in the pyramid?

“Tactics” or tactical decisions relate to choosing different strokes, plays, attacking or defending strategies, etcetera.

The tactical training is the third level of the pyramid, because the athlete needs the technical skills to execute different choices. If a boxer has only one way of fighting, there are no tactical decisions to be made.

Example: A volleyball player may choose to gently tip the ball over the opposing teams block with a soft move or s/he may choose to aggressively spike the ball towards the ground on the opposing team's side of the court. However, in order to have the aggressive, vertically oriented spike as an option, the player needs to have jumped high enough to hit the ball (significantly) above the height of the net.

On occasion, certain sports and situations bypass the technical abilities and display a direct connection between **the physical abilities and the tactical decisions.**

Example: During the mountain stages in the Tour De France when Lance Armstrong broke away from the pack with a powerful acceleration, he could only do so through the ability to express higher levels of mechanical power – compared to his competitors - into the pedals.



Example: Many major badminton tournaments at the world class level take place in humid conditions in Asia. Though very well prepared, some Danish players would, on occasion, have to take tactical risks to win each rally within the shortest possible timeframe because they knew that they would become exhausted from playing in the heat.

Example: High levels of fitness may also help maintain the ability to make accurate tactical decisions during competition. In Ancient Greece, the philosophers trained with the wrestlers and today many politicians and CEOs are known to go to great lengths to stay fit. Top performers, who rely mainly on their mental faculties, know that at any given time the brain uses a significant portion of the available energy in the body. In other words: You have to be fit to think! ⁽¹²⁾

Several real life examples of the dynamics of the training factor pyramid were discussed above. It is those exact relations that strength coaches and personal trainers must understand and be able to communicate when faced with the challenge of convincing and motivating athletes and coaches of the need for strength and conditioning.

With the Training Factors Pyramid we can specify the question “What is needed to DOMINATE the environment?” and now ask:

- What **physical abilities** are needed to dominate the environment?
- What **technical abilities** are needed to dominate the environment?

- What **tactical abilities** are needed to dominate the environment?
- What **psychological** and mental factors are needed to dominate the environment?

This rest of this manual focuses on the first question: What physical abilities are needed to dominate the environment?

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