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Prerequisite Skill Set for Successful High Jumping

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Introduction

- Personal experience with athletes coming into our university program from the high school and community college levels (Teaberry, Wentland, Dykstra, Margalit, Broxterman, Leeper, Lancaster, Sellers, Kynard)

- Personal experience with post collegiate athletes who did not attend our university (Nieto, Hemingway, Rovelto, Williams, Dilling)

Personal concern / frustration revolves around athletes and perhaps sometimes coaches who fail to recognize:

1. Relationship between technical development and biomotor development. Quite simply the athlete must first have the physical capability to perform the requisite skill.

2. There are no shortcuts! Talented athletes may jump high but will not likely jump high consistently and when it matters most if sound biomotor development and technical skill progressions are not adequately addressed. I honestly am completely unaware of any secrets I possess with respect to training or high jump technique.

In this presentation I will concentrate on the approach and takeoff mechanism and the prerequisite skill sets necessary in building an effective approach and takeoff.

Approach

Objectives

By running on a curve the athlete is able to achieve two desired outcomes.

1. A lean away from the bar results, enabling the athlete to leave the ground with a more vertical inclination.

2. The athlete's center of mass is lowered without compromising postural integrity. This allows the athlete to apply force through a greater vertical range at takeoff.

The faster the athlete runs on the curve the greater the lean and lower the center of mass. The limiting factors will be strength and the speed capabilities of the athlete. The speed capabilities are significantly influenced by proper running mechanics and posture.

Building an effective approach then requires the following skill set:

1. Ability to overcome inertia efficiently and accelerate in a uniform manner. Velocity follows momentum.

    a. Pushing mechanics characterized by low heel recovery, acute shin angles, near complete hip extension and big arms.

    b. Efficient and consistent acceleration is critical in the high jump due to the relatively few number of steps in the approach and the critical need for accuracy.

2. The athlete must be able to run effectively on a curve.

    a. Efficient foot ground contact will facilitate effective force application.

    b. Hips axis and shoulder axis must remain in natural alignment and perpendicular to the direction of the run.

Takeoff Mechanism

Objective

To convert horizontal velocity developed in the approach run to vertical velocity at takeoff. The athlete must apply large force, through as great a range of motion as possible in as short a period of time as possible.

1. The penultimate step

   The athlete will contact the ground flat footed keeping the hips moving level over the foot so as to prevent the center of mass from dropping onto the takeoff. It is important to keep the torso erect while moving over the penultimate foot.

2. Takeoff step

   The athlete will recover the heel of the takeoff leg below the knee of the penultimate leg while moving over the penultimate foot. The takeoff leg will be fired into the ground well in advance of the center of mass utilizing the glutes and hamstrings. The quadriceps will be isometrically contracted assisting in stabilizing the knee joint and facilitating a strong eccentric contraction at takeoff.

3. The takeoff mechanism can be described at a push-through-pull-hip extension action.

Creating an effective takeoff then requires the following skill set:

1. a) Ability to maintain an erect posture with torso b) with the hips low c) while moving (quickly) over the penultimate foot in single support

   - Mechanics of foot strike of penultimate

   - Core Stability

2. Ability to ammorticize while executing takeoff mechanism

3. Postural integrity – dictates order of firing

4. Ability to maintain proper hip / shoulder axis relationship particularly with respect to the longitudinal axis of the takeoff foot

My Foundational Beliefs

1. Basics are most important!

   a. General – Specific

   b. Simple – Complex

2. Prerequisite skill sets must always be addressed to some degree