

Analyzing the place kick in tackle football to determine the factors that achieve...

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Analyzing the place kick in tackle football to determine the factors that achieve highest foot velocity at ball impact

analyzing the place kick in tackle football to determine the factors that achieve highest foot velo at ball impact. This paper presents an analysis of the 'place kick' in tackle football with the aim of determining the factor, which achieve the highest foot velocity at the ball impact. In determining such factors, the two motion of the two legs' segment and the human trunk have to be described.

Usually, the kicking task is separated into three main tasks. These include the approach, execution, and follow-through (Kreighbaum 370). The tasks are described in tables as shown below, with each table showing a separate phase, starting with the approach, execution, and then the follow-through phase.

Phase: Approach

Sequence

Order

Body Part

Articulation and action

Muscles

Plane and axis of motion

1

Body trunk

Stabilization of the body trunk

psoas major, Abdominals,

erector spinae, spinal

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postural muscles

N/A

2

Left shoulder

Horizontal abduction of the left shoulder

Middle deltoid, anterior deltoid, supraspinatus

Sagittal

3

The Right hip

Internal rotation and hip flexion

Tensor fascia lata, psoas, rectus femoris, iliacus, Sartorius, adductor group

Longitudinal and Transverse

4

The left Hip

Extension movement of the left hip

Gluteus maximus, adductor magnus , hamstring group

Transverse

5

The Right knee

Extension movement of the left knee

Quadricep group

Transverse

6

The left knee

Extension movement of the left knee

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The quadricep group

Transverse

7

Right ankle

Plantarflexion movement of the right ankle

The plantarflexors

Longitudinal and Transverse

Phase: Execution

Sequence

Order

Body Part

Articulation and action

Muscles

Plane and axis of motion

1

Body trunk

Rotation stabilization to

the right for a right kick

psoas major, Abdominals,

erector spinae, spinal

postural muscles

Longitudinal

2

Left shoulder

Abduction movement

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Middle deltoid, anterior deltoid, supraspinatus

Sagittal, M-L

3

The Right hip

Extension movement

Gluteus maximus,

hamstring group

Transverse

4

The left Hip

External rotation with eccentric extension movements

The Gluteus med; the gluteus min; the hamstring group; the adductor
magnus

Longitudinal and Transverse

5

The Right knee

Flexion movement

The hamstring group, popliteus

Transverse

6

The left knee

Eccentric extension movement

The quadricep group

Transverse

7

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Right ankle

Plantarflexion

The plantarflexors

Longitudinal and Transverse

8

The Left ankle

Eccentric plantarflexion

The plantarflexors

Longitudinal and Transverse

Phase: Follow-Through

This phase serves the purposes of keeping the foot in contact for longer with the ball as well as guarding against injury. Longer contact time maximizes the transfer of momentum to the ball thereby achieving maximum velocity (Barfield 713). This phase is tabulated as follows:

Sequence

Order

Body Part

Articulation and action

Muscles

Plane and axis of motion

3

The Right hip

An eccentric external rotation; an eccentric extension; an eccentric abduction

The hamstring group; the posterior fibres of gluteus med; the quadratus

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femoris; the piriformis; the gluteus maximus

Longitudinal and Transverse

5

The Right knee

Eccentric flexion of the knee

The hamstring group

Transverse

Generally, a close relationship exists between the player's foot velocity and resultant ball velocity. The speed of the foot is highly governed by the combination of various aspects that include the rotational torque of the hip, the flexor strength of the hip, and the quadriceps strength (Barfield 718). This means that the foot velocity is mostly affected by these factors.

Work Cited

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