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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   
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   
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   
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   
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 amstring group; the posterior fibres of gluteus med; the quadratus 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 toque 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   
Barfield, B. " The biomechanics of kicking in soccer." Clinics in Sports Medicine, Vol. 17, No. 4 (1998): 711-728. Print.   
Kreighbaum, Ellen. " Performance Analysis of Throwlike Movements ." Kreighbaum, Ellen. Biomechanics : a qualitative approach for studying human movement. Boston: Allyn and Bacon, 1996. 370-374. Print.