



## Relationship between Lower Limb EMG Activity and Knee Frontal Plane Projection Angle during a Single-Legged Drop Jump

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Received date: 07 December, 2021; Accepted date: 22 December, 2021; Published date: 29 December, 2021

### Introduction

Injury to the knee-joint complicated is one among all in every of the foremost normally occurring injuries in a variety of sports. Most knee injuries like anterior symmetrical ligament tears and patellofemoral pain syndrome occur through noncontact or overuse mechanisms. The reason behind such noncontact and overuse injuries is complex. Abnormal lower limb biomechanics throughout activity has been wide postulated as an element within the etiology of each traumatic and overuse knee injury. Altered hip, knee, and mortise joint mechanics are termed dynamic knee valgus and square measure wide rumored to be associated with knee injury. Different factors embody changes in lower limb dynamics and muscle strength or length. Variety of screening tests is utilized in the literature to assess dynamic knee valgus. These have enclosed the single-leg squat, drop vertical jump, drop landing, and single-leg landing. Most of those studies used three-dimensional (3D) motion analysis to quantify lower limb biomechanics, and these ways square measure seen because the gold customary for analyses of this sort. However, due to the money, spatial, and temporal value of 3D motion analysis it's not sensible for many clinical settings or to be used in massive screening programs helpful to sport. Therefore, 2-dimensional (2D) techniques, that use more cost-effective, portable, and easy-to-use instrumentality, could also be a lot of helpful. Two-dimensional analysis has been used antecedently to live knee-valgus angle in athletic, general, and bruised populations.

It is introduced the utilization of frontal-plane projection angle of the knee to quantify knee valgus motion throughout the SLS check. 2 recent studies have checked out the validity of second video analysis in quantifying FPPA of the knee compared with existing 3D techniques. Two-dimensional peak FPPA was shown to account for fifty eight to sixty fourth of the variance in average peak 3D knee-abduction angle between subjects throughout side-step and side-jump activities. Wilson and Davis found that second FPPA mirrored twenty third to half-hour of the variance of 3D values. A lot of fascinating, they found that second FPPA was considerably related to with each knee external rotation and hip motion, two major parts of dynamic valgus. They all over that though second analysis isn't a substitute for 3D measurements of lower limb mechanics, it's helpful for screening knee joint FPPA to spot speculative athletes. People who demonstrate excessive second knee valgus square measure thought to demonstrate 3D mechanics that leaves them at high risk of knee injuries like anterior symmetrical ligament tears and patellofemoral pain syndrome. Moreover, second analysis could also be helpful for evaluating the worth of coaching and intervention programs in reducing frontal-plane dynamic knee valgus.

To date, solely infraclass correlation coefficients for within-day dependableness of FPPA are bestowed with no study presenting activity error values related to these tests. Therefore, additional investigation of the dependableness of second FPPA is required before it will be counseled to be used in screening tests. If the dependableness and activity error of this screening technique will be established, clinicians are going to be able to use the tests confidently whereas additionally having the ability to gauge individual performance a lot of instructively. Therefore, the aim of this study was to assess the dependableness and associated error activity of second video analysis of lower limb dynamic valgus. Though the drop-jump check has been connected to anterior symmetrical ligament injury in feminine athletes and shown to be sensitive to changes in coaching, the validity of the SLS and SLL tests with relation to injury prediction has not been studied. Two-dimensional assessment of those tests provides a straight forward, cheap, and reliable different for clinicians and with additional validation could also be helpful for large-scale injury-risk screening.