

## Editorial

# Knee Osteoarthritis and Orthotics Treatments

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Arthritis is a most common joint disease in adults especially over 65 years old which may lead to joint degeneration. In this case knee joint is more affected than other joints of body [1]. By increasing life expectancy in many countries after 60 years old, some diseases such as knee osteoarthritis may affect quality of life in older adults. Thus, treatment of this disease may become more important for practitioners [2,3,4,5]. Although, increasing the number of knee osteoarthritis especially among younger people has made a challenge for therapists in recent years.

Knee joint is responsible to maintain the body in standing posture and needs to stabilize this joint in standing, walking and running by soft tissues those surrounding its [6]. The ground reaction force exerts load to knee joint up to 2.5 to 3 times of body weight in middle of stance phase during walking with normal speed. This ground reaction force passes through lateral of heel and medial of knee joint, this force in medial compartment may be several times of lateral side, so that could create varus moment and provide leverage adductor moment around this joint during stance phase [7, 8, 9]. Lateral collateral ligament and Iliotibial band are two soft structure tissues in lateral side those could confront with this force in healthy persons. There is a deviation from normal alignment in tibiofemoral joint, means 5 to 10 degree physiological valgus, in the presence of knee osteoarthritis. This situation may expose knee to varus or valgus deformation in walking. The articular cartilage and meniscus in medial side become thinner and cause genu varum in knee joint most frequently, so that the incidence of knee medial compartment degeneration is ten times more than lateral side [10]. The nature of Knee osteoarthritis, the reasons of its appearance and different kind of treatments, are interesting issues for researchers who are working in the field of medicine and rehabilitation.

There are many non-surgical treatments for knee osteoarthritis in the aim of decrease or release of signs of this disease. Orthotics treatment along with/ without physiotherapy is an usual conservative treatment for this problem and usually is prescribed for these patients [4]. The main objective of orthotics treatment is varus deformity correction in knee joint and realigns the mechanical longitudinal axis of lower limb.

Lateral wedge insole and knee orthoses are two common options which may be considered for this type of patients in the aim of creating knee valgus [11, 12]. There are some studies those have evaluated the effects of these two orthoses separately in same population of study. The results of the majority of these studies indicated that these devices have positive effect in patients with osteoarthritis so that decrease the sever signs of this disease while lateral wedge insoles has had better acceptance among participants in these studies. In this line, Jones et al [13] reported that however the results of analysis of gait analyzing and force plate apparatus showed an improvement in functional variables and adductor moment after two weeks using of valgus brace, but lateral wedge had better accepted among 28 patients. Pagani et al [14] also showed an improvement in kinetic and kinematic parameters of walking after using valgus brace (eight degrees) and lateral heel wedge that indicated a reduction of abduction moment and its lever arm within 10 knee osteoarthritis patients. Two studies evaluated other dependent parameters of this disease such as pain, knee function and knee varus correction variables. Van Raaij et al and Giriya et al studies investigated these parameters and concluded that these devices have positive effect on these parameters, although Van Raaij et al did not find any differences between two groups of 91 participants who have been used knee valgus brace in one group and 10 mm lateral wedge as another group. The latest study also stated that lateral wedge had better accepted by these patients [15, 16]. The results of these studies indicate that pain may be reduced after using of these devices [17, 18, 19, 20] as Lindenfeld stated that there was 48% pain deduction in experimental group in compare of control group of participants [21]. However, one study reported that both devices are same effect [22]. The latest study also showed that both orthoses were able to decrease knee adduction moment, but there was no significant difference between lateral wedge insole and knee valgus brace. In this way, one study concluded that Genu ortho compensated 10% of lateral knee moment [21]. Other studies evaluated two knee valgus braces with 4 and 8 degree inclinations and explained these orthoses have decreased knee adduction moment respectively, 18 and 21%. With concern to use 5mm lateral wedge insole two studies concluded that knee adduction moment have been 7 and 6 percents reduction [13, 23].

In addition to above parameters the effects of other parameters in relation of knee osteoarthritis were measured by other studies. For example, some authors reported that after using these devices, walking speed and proprioception have been increased, load over medial knee compartment decreased and also physical functional of patients improved [1, 13, 24, 25]. Apart from above results, there are many studies that concluded that these orthoses did not have any effect on knee adduction moment [15]. Therefore, these controversies show that more investigations are required to create better understanding of the effect of these devices on knee osteoarthritis especially when surgery is considered as final alternative for treatment. In spite of above results regarding the positive effects of these two types of orthoses in knee osteoarthritis orthoses on knee osteoarthritis it must be taken in to account that using of orthoses should be convenience

for these patients so that user friendly devices might be other parameter that could be evaluated in future studies.

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