Effect of the mulligan concept on a Ballet dancer with a knee algia

Abstract

Introduction: The repetitive execution of dance movements in the Classical Ballet due to the nonanatomic rearrangement in several positions can result in injuries, initiating a state of arthralgia.

Objective: To analyze the effectiveness of the Mulligan concept in the rehabilitation of a classical ballet dancer, promoting a reduction in the algic state in her left knee.

Case Report: Female patient, 17 years old, a classical ballet dancer for 10 years, reported algic state in the left knee for 5 years. During the rehearsal period and with algias she was submitted to a musculoskeletal manipulation, in which was used the “Mulligan Concept” to the reduction of the algic process. At admission, during and after the treatment, the patient was evaluated through the Visual Analogue Scale (VAS) of pain, and, besides that, it was used an algometer to measure the pressure that triggered a sensorial pain threshold in the ligaments, evaluating the effectiveness of the technique.

Final Remarks: The Mulligan concept indicated to be appropriate for the pain relief, reduction of muscle tensions and postural failures in the reported patient.

Keywords: arthralgia, rehabilitation, musculoskeletal manipulation

Introduction

In ballet dancers the repetitive movements and the non-physiological body alignment, represented by the lateral rotation of the hip, knee and ankle (position “en dehors”), and the support at the metatarsal ends (poinée position or middle pointe) lead to a maximal ankle plantar flexion, hyperextension of the hip and body misalignment, becoming the main risk factors of the profession, generating intense pain and musculoskeletal injuries.

Besides that, the inadequate execution technique, associated with biomechanical unbalances, results in the primary factor of chronic lower limb musculoskeletal injuries. This happens because, with the compensatory mechanism to these imbalances, there is an overload of the joint, resulting in knee pain, especially in the tibiofibemoral and patellofemoral joints. Thus, the prevalence of knee injuries is high, representing approximately 20% of all injuries in the lower limbs and with atraumatic and chronic characteristics.

Case report

Female patient, 17-year-old, a classical ballet dancer for 10 years, reported algic state in her left knee for 5 years, associated with periods of exhaustive training (rehearsal), that disappears in periods of soft training (classes), with imaging tests evidencing absence of arthropathy. During the rehearsal period and with algias, the patient was submitted to a physiotherapeutic treatment, in which was used the “Mulligan Concept” (MWM movements) to the reduction of the mentioned algic process. The treatment was carried out for 4 weeks, with 3 sections per week, totaling 12 sections. During the sections, the movements of joint adjustments that relieved the patient’s pain, varied during the medical attendances, that could be slides or femorotibial rotations, that were maintained by ten seconds, so that, in the first attendance, the movement was made 3 times, in the second, 10 times, in the third, were performed two repetitions of 10 slides and in the subsequent attendances, were performed 3 repetitions of 10 slides. At admission, during and after the treatment, the patient was evaluated through the Visual Analogue Scale (VAS) of pain, and, besides that, it was used an algometer to measure the pressure that triggered a pain threshold in the ligaments: patellar (PL), medial collateral (MCL) and lateral collateral (LCL), as ways of evaluating the evolution of her state, as presented in the table 1. The patient evolved with a significant improvement in VAS, initially referring a VAS of 8 and, at the end of the treatment, VAS 3, besides an increase in the pain threshold in the three ligaments evaluated, mainly in LCL presented in graphic 1. One week after the last session, the patient referred the absence of algias, both in periods of classes as in periods of rehearsals.

Discussion

In the musculoskeletal treatment of the joint dysfunctions, the physiotherapist can use manual therapy (musculoskeletal manipulation) as a solid basis of treatment. One of these manual therapy techniques, includes mobilization with movement (MWM), a type of joint mobilization developed by Brian Mulligan, Mulligan’s original theory for the efficacy of a MWM is based on the concept of a positional joint failure, which occurs due to the injury and it can lead to a change in the joint alignment and consequently in its biomechanics, resulting in symptoms such as pain, joint stiffness
or weakness.\textsuperscript{15} In this sense, the “Mulligan Concept” technique uses the MWM movements to approach defects in the restoration of the arthrokineamic processes and in the osteocynmatic movements.\textsuperscript{13} This technique is recognized for its therapeutic importance in musculoskeletal disorders with a difficult treatment, in which the traditional techniques of manual therapy are not used.\textsuperscript{14} Regarding the MWM movements, the literature presents a good efficacy in the reduction of joint pain during and after isolated sections, as well as after a prolonged treatment. However, before the application of the “Mulligan Concept”, the physiotherapist must look for in the patient signs like: loss of movement, pain associated with movement or pain associated with some specific activities. In the case of the presence of any of these alterations, the practitioner can promote the rehabilitation of the patient through MWM movements, which consist in perform a joint movement that is parallel or perpendicular to the main articular axis and this movement should improve muscle contraction, the movement of the affected joint and relieving the referred pain. However, the mobilization performed by the physiotherapist should not be painful, therefore, it is important to observe the patient’s reaction to make sure that the movement is not generating pain.\textsuperscript{15} Despite studies reporting good efficacy of the “Mulligan Concept” in the therapeutic in short- and long-term, there is still a lack of more evidence in the literature to ratify these benefits.\textsuperscript{14} In this context, the reported case demonstrates good results in the improvement of the pain soon after the sessions and also at the end of the whole treatment, as presented in the Table 1 and in the Figure 1. These results presuppose the possibility of the MWM movements being appropriate for the pain relief, for the reduction of muscle tensions and also for the postural failures in the classical ballet dancers, due to the increasing of the pain threshold in the joint of the patient in question, mainly in the region of the LCL, as presented in the graphic 1, possibly due to the “en dehors” position that is very explored in the classical ballet, which tends to overload this ligament in specific, that with the treatment obtained significant improvement.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{image1.png}
\caption{Pain threshold in the Lateral Collateral Ligament before and after the session with the “Mulligan Concept” technique.}
\end{figure}

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|}
\hline
 & \textbf{1\textsuperscript{st} session} & \textbf{12\textsuperspt session} & \\
\hline
\textbf{PL} & 2.66 Kgf & 2.64 Kgf & 3.06 Kgf & 5.80 Kgf \\
\textbf{MCL} & 1.40 Kgf & 2.96 Kgf & 3.56 Kgf & 5.66 Kgf \\
\textbf{LCL} & 1.64 Kgf & 2.36 Kgf & 4.38 Kgf & 6.34 Kgf \\
\hline
\end{tabular}
\caption{Comparative of pressure to cause pain threshold in the measured points}
\end{table}

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\section*{Conflict of interest}
Author declares that there is no conflicts of interest.

\section*{References}