

The expert review to the dissertation paper

The title: **Pelvis Malposition Related to Knee Dysfunction by Loading of Long Duration Presentation in the Case of Endurance Runners**

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The volume: 91 text pages, 51 figures, 30 tables, 1 appendix, 100 quotations.

The style Empiric descriptive study

The author is a physiotherapist and osteopath of the Athletic National Team and an active runner. He observed that endurance athletes have often knee pains associated with a deviated position of the pelvic bone on the side where the knee pain occurs. The knee pain is usually treated locally with the tendency to relapses. To prove his personal experience of causal relation between the pelvis and the knee, he decided to verify this relation through measuring of the position of both pelvic bones, using simple clinical methods. He measured also the range of external and internal rotation in the hip joint and the range of flexion and extension in the knee joint on both sides. He adjoined also the measuring of the length of lower extremities. The measuring was performed two times on the beginning and after 4 weeks. He measured clinically 100 athletes, loaded with equal portion of endurance running. This group was divided in two groups 50 athletes with knee problems connected with pains and 50 athletes without knee pains as the control group. He found that all athletes with knee pains had the problems with shifting of pelvic bones on the same side as the knee pain. He concluded, this finding could be useful not only for the treatment of the runners, but also for the physiotherapy.

The text contains some orthographical mistakes, which are not relevant to the content of the paper but they are inconvenient in the dissertation paper. I refer only at random pg .21, 29. On pg. 23 in the picture, the curves are not marked to which function they belong.

The author realized an extensive and detailed research of literature. He deduces from the literature, the knee pains may be caused by some dysbalance in different muscle chains. He makes responsible for the troubles only thigh muscles and he does not remember the function of m. iliopsoas (Pg 8) important for the walking as well as for running, which connects the lower extremity with the pelvis as well as with the lumbar spine, bringing so the lumbar spine also in question of this problem, even if this muscle is referred in the quoted literature.

From his deduction is not possible to derive the original cause of knee pains in endurance runners My meaning is that a dissertation should not verify only the

kinematic dysfunction but must search the cause being responsible for the shifting of the pelvic bone, provoking the pain. He postpones this question to a later research.

The occurrence of the deviated pelvic position is verified by the leaning forward test, which is not a real measuring but is performed only at a guess (yes or no). The measuring of the range of movement by clinical methods is subjective and this subjectivity is restricted by the fact all measuring being performed by the same person. But measuring on living subjects is not quite exact because the values may oscillate between 10 to 20%. Very small deviations of degrees or centimeters give not the exact amount of length or degrees responsible for the changes, but nevertheless it shows a visible tendency to knee pain which can be ascribed to mal function of pelvic bones due to overloading.

The range of rotation in the hip joint is reliable only if the pelvis is fixed, but the author reads the value of the range in the moment when he guesses, the pelvis begins to move. The measuring on the living body is not equal as a measuring on a machine even if Descartes defined the body as a complicated mechanical machine. The body is not symmetric as it seems to be. We must steadily calculate with some individual differences in the position of the pelvic bones. We must decide which deviation of the symmetry is due to individual normality and which deviation surpasses this individual norm.

The retesting of athletes with knee pains, as well as of controls without pains revealed some differences in the pelvic bones.

The retesting revealed that two athletes with pains got a supination trauma in the 4 weeks of testing period and their difference in the SIAS position visibly augmented. One athlete got pains and the difference increased from 1,8cm to 2,5cm.

In the control group one athlete got also supination trauma and his difference in the SIAS increased from 0,2 to 1,5 cm. Another control athlete got discus troubles and the difference in the SIAS increased from, 0,4 to 1,5 cm.

From this small number of observations the author deduces the conclusions for the physiotherapy. This is a small number of observations to allow general conclusions, but it shows a visible tendency, that high load may worsen the pelvic deviation.

All athletes in the group with knee pains had deviations of the pelvis on side of knee pains. In the control group was found the small pelvic deviation only in 5 athletes.

The flexion in the knee was larger on the right side and extension was larger on the left side. The internal rotation was larger on the right side and the external rotation was larger on the left side.

In the control group were also small SIAS deviations without pains. In athletes with knee pain the differences were greater in extent.

The control group had SIAS deviation more on the right side. On the left side were the shifts backwards; therefore the left iliac bone has a tendency to backward shift. The right iliac bone has a tendency to the forward shift.

Anterior shift tends to medial projection of pain and posterior shift tends to lateral projection of pain but it is statistically not sure

How to explain the tendency of the right iliac bone to the forward shift and the left iliac bone to the backward shift? The author ascribes this fact to the neuro-control mechanisms. Left leg has a tendency to external rotation in the hip and in the knee. Reverse situation is on the left side.

The fact of existing relation between the iliac bone and the knee is nothing new in the medicine. But it is important for the sport, that a bad position in the sacroiliac joint may cause knee pains which are the warning symptoms that a structural change may happen if such changed system will be heavily loaded for long time, causing structural deformations in the knee and may handicap the person not only in power sport but also in normal life. The physiotherapist may inform the doctor about this problem if a young sport adept will make the career in the endurance running. The early disqualification may prevent the structural changes in the bones with future handicap.

Conclusion

This work does not bring new observations in the medicine. It verifies only own experience by measuring, but it brings a new experience in the sport medicine. Knee pains are usually examined locally and the relation between the knee and the small deviation of pelvic bones is not taken in account. The presented observation may be useful for coaches determining the career of endurance runners and may enable the early disqualification to prevent structural changes in the knee and possible handicap of the runner. This work could be accepted as a dissertation for the habilitation but after changing the conception of the work.

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