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**Learning to walk modifies the whole locomotor skeleton.
Functional meaning of these changes for posture and gait.**

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Loading of the skeleton and learning to walk entail drastic changes of the whole locomotor skeleton. Development of balance strategies and motor development are tightly submitted to these morphological changes.

As the result of our previous works, we present an overview of these interrelated vertebral, pelvic and lower-limbs changes. Formation of vertebral curves and transition from the varus position of the lower limbs characteristic of newborns to their valgus position characteristic of adult are the two main visible transformations. The pelvis plays an important role in these changes. We developed a software package, devoted to the pelvis, "DE-VISU", which we applied to 50 adult and 20 newborn pelvises. The role of the pelvis in sagittal balance of the trunk above the lower limbs is demonstrated through the "angle of sacral Incidence". This sagittal pelvic parameter increases during postnatal growth with acquisition of walking, from 27° to 54°. Its degree will determine the degree of lumbar curvature, so as to bring the centre of gravity of the trunk, in sagittal view, behind the coxo-femoral joints. DE-VISU also shows that the three-dimensional orientation of the acetabula changes during postnatal growth: the angle of anteversion decreases from 20° to 3°, while the anteversion of the femoral neck decreases from 30° to 15°. We suggest that the relationships between acetabular and femoral anteversion are antagonist during gait acquisition. The sphericity angle of the acetabula increases from 166° to 180°. The angle of acetabular inclination remains almost unchanged around 34°. These changes will influence the direction of the axes of the lower limbs. Our systemic analysis of the integrated functional system linking rachis, pelvis and lower-limbs demonstrates that the pelvis is the "key-stone" of the system.

The modification of these architectural parameters are involved in the progressive control of balance. They must be taken into account together with the coordinated neuro-muscular maturation.

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