Use flat shoes and increase neurogenesis!

When starting to walk the plantarflexor triceps surae muscle is inactivated, the dorsiflexor tibialis anterior activated, and we fall forward because of gravity. The first step is taken, and just as the foot leaves the ground, we fall sideways toward the same foot. The hip abductor gluteus medius on the other side is stretched, and a strong reflex contraction is released. Golgi tendon organs in the gluteus medius and mechanoreceptors in the foot soles send information rapidly up to the cerebellum and cortex where blood flow increases in neural stem cell niches and drives neurogenesis.

The tendon organs send information on weight and inertia of the head and trunk above hip articulations. The foot sole mechanoreceptors adds information on the alignment of the whole body to the ground.

When we stand and walk wearing shoes the foot soles are not parallel to the ground, as the heels of the shoes form a small angle of the soles up to the heads of the metatarsal bones. Foot sole mechanoreceptors now adds information on the alignment of the whole body to this slanted surface area of the shoes. Horst Mittelstaedt names this “idiotropic tendency” in his discussions on the subjective visual vertical.

Information from tendon organs and mechanoreceptors of the foot soles remain in the cerebellum and cerebrum, and won’t change when we take off heeled shoes. Shoes give better somatosensory feedback from the sole of the foot than bare feet because they have a larger support surface area. This information will only change when we use flat shoes with no elevation of the heels. The alignment of the whole body to this support surface area will then be parallel to the gravity force, and neurogenesis will be.

There probably are no flat shoes that make the soles of the feet parallel to the ground for sale. However you can make a pair of such shoes if you use a pair of plimsoll-style canvas shoes with rubber soles. They look quite flat but are provided with an in-sole (the sole nearest under the foot) that is a little thicker in the heel part. Remove this sole and replace it with an eventhick one.

In the 1970s Robert Heath implemented a clinical study where he stimulated the cortex of the cerebellar vermis in patients with schizophrenia. This probably activated cells in the fastigial nucleus and, through this, inhibited activity in the directly connected hippocampus, which is known to increase neurogenesis.

Increased neurogenesis may also play a role in neurological diseases such as Alzheimer’s and Parkinson’s disease, epilepsy, stroke, brain cancer, and in diabetes, and immune responses.

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