

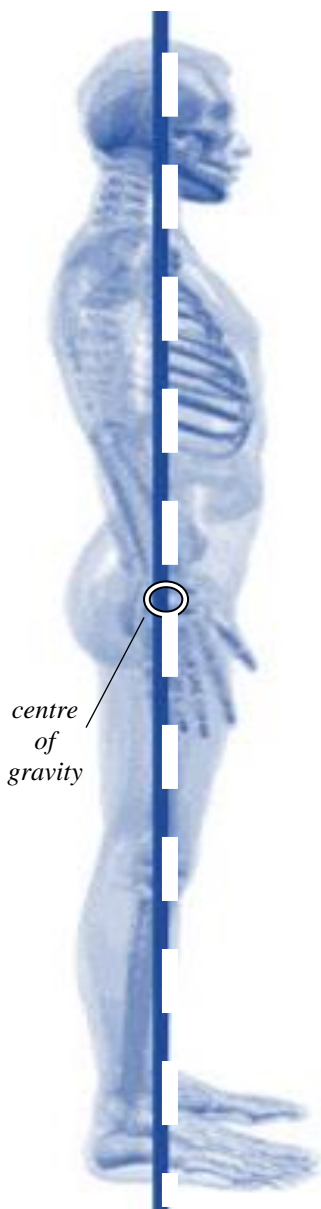
# The advantages of bipedalism

Quadrupedal primates may *facultatively*\* adopt bipedality as a short-term measure. This might be for terrestrial travel, reaching food, carrying offspring, display, or aggression, but upright carriage is only a temporary strategy and they will revert to characteristic quadrupedal progress as soon as the immediate need passes.

*\*faculative – as a matter of short-term expedience*

The modern human is an *obligate* biped, which is to say that the commitment to bipedalism is total and has become the only mode of stance and locomotion. Lifestyle and all human activity is centred around bipedalism. No mature human would instinctively revert to knuckle-walking, no matter how ill-educated, low-born, distracted, or abandoned. The infant strives to stand upright – the elderly seek not to fall.

Development of the modern human included the move away from arboreal living to a totally ground-based living, forest to savannah. This allowed movement between one afforested area and another that might have been important in the acquisition of food or finding of suitable mates. Arboreal creatures are entirely dependent upon the trees in which they live and are confined to the extent of the tree-covered area.



## Specific advantages of bipedalism:

- Improved stride-length and walking speed are gained by lengthening of the lower limbs.
- Running is particularly efficient in humans - not in terms of speed, but in endurance. It is thought that this gave the ability to run down and exhaust faster prey animals. It certainly extended the area over which humans could range to hunt or gather.
- Upright posture positions the centre of gravity over the feet. This utilises balance and the posture and gait require less energy input to counter the effects of gravity.
- The head can be raised so that the eyes look forward in normal relaxed posture. Elevated stereoscopic vision allows good surveillance and an increased zone of awareness.
- The face and facial expression becomes a sophisticated and subtle communication device.
- The forelimbs are no longer used in stance or locomotion. This frees them for gesticulation and sign-language communication, nursing, carrying, social grooming, preparation of food, manipulation and manufacture of tools and objects.
- Stereoscopic hand-and-eye co-ordination encourages fine manipulatory skills, precision, and creativity.

Upright stance, viewed from the side, positions the mastoid region of the skull over the shoulder joint, the shoulder joint over the hip joint, the hip joint over the knee joint and the knee joint over the midtarsal joints. With good posture, the energy to stand erect uses only a very little more energy than when lying down. Balance and passive transfer of bodyweight down the skeletal chain are the main contributors to the maintenance of erect stance. The anteriorly positioned centre of gravity would cause the erect body to fall forwards. This is corrected by the resistance of the stiff lever arm of the rearfoot and soleal contraction pulling on the posterior calcaneal tuberosity.

# THE ALLIANCE PROFESSIONAL DEVELOPMENT PROGRAMME

## THE ADVANTAGES OF BIPEDALISM

*Answers should be submitted on A4 paper and should be of sufficient length to demonstrate full understanding of the topic. Single word answers are not permissible. Try to answer in one or two short paragraphs, not more than 1/3<sup>rd</sup> page per answer.*

- Q1. What is 'bipedalism'?
- Q2. The modern human is an obligate biped – explain what is meant by this,
- Q3. List the advantages of bipedalism.
- Q4. Comment on the efficiency of walking on two legs.
- Q5. How might lengthening of the lower limbs contribute to human activity?
- Q6. What are the advantages of raising the head?
- Q7. Describe upright stance, seen from the side.
- Q8. How is energy related to good posture?
- Q9. How is upright posture maintained?
- Q10. Describe the Soleus, its origin and insertion.

*Please credit the Alliance with the administration fee (£25) and send your answers to:*

*CPD Dept, The College of Foot Health Practitioners, Parkside House, Oldbury Road, Blackheath, B65 0LG*

*10 CPD points will be credited on successful completion.*

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