Well defined question: In a normal standing position your feet are more or less flat on the floor, and your weight is supported by the normal force exerted on your heel and on the ball of your foot (see left panel of figure). When you rise up on tiptoe your foot is at an angle to the floor, your weight is supported by the ball of your foot, and your Achilles tendon is under some tension (right panel). For a person of mass 100kG standing on tiptoe with weight equally distributed over both feet, with feet at an angle $\theta = 45^\circ$ to the floor, please estimate (to 20% accuracy)

(a) the tension in the Achilles tendon
(b) the force exerted by the ankle joint on the leg bone

You may assume that the ankle joint is a point, and that the ball of the foot and the point of attachment of the achilles tendon are respectively 15 cm and 5 cm from the ankle joint.

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Ill-defined question: To rise from a sitting position you need to generate torque about the knee joint. As you can verify from your own experience this torque is generated by the quadriceps: the large muscle on the top of your thigh. Question: how does it do this? can you come up with (and justify) a simplified picture along the lines of the 'foot' figure? How much tension is required to be in a sitting position but exert no normal force on a chair?