

Läsåret 07/08

SG1108 Tillämpad fysik, mekanik, 7,5 hp

Projekt: Kulstötning

A shot-putter concentrates on a smooth build-up of the speed of his body across the circle and extending his arm, thus accelerating the shot in order to give maximum momentum of the shot at the point of release. He starts in a crouched position with the shot resting under his chin and finishes in an upright position with arm fully extended. The angle that the extended arm makes with the horizontal will affect the angle of projection of the shot; also the putter 'explodes' into action across the circle and the speed of projection of the shot depends on this initial burst. The putter thus controls the speed and angle of the shot.

Clearly the shot-putters problem is to launch the shot in such a way that the range is as long as possible. The figure illustrates the motion of the shot. A shot-putter usually puts the shot with same speed every time and this depends on his physical strength and style. If a world champion launches the shot from a height of 2 meters and achieves a range (oa) of 22,15 meters, what is the angle and speed of release of the shot?

