

## Determining the degree to which a hen's egg is cooked by boiling

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Eggs are very good sources of low-cost and high quality protein. They are delicious and can be eaten well cooked, medium-cooked or raw. The objectives of this study were to define and determine the degree to which a hen's egg is cooked by boiling without breaking its shell. Assuming that an egg has a radial symmetry and a constant density, the moment of inertia is proportional to its mass and square of its radius. As the eggs are heated, the protein inside them turns harder. That affects the apparent moment of inertia of an egg. The torsion pendulum was used to measure rotational motion of an egg. Two springs were attached to the side of the egg holder to create restoring torque, hence oscillation. A photo gate together with a 10-slot disc was used to detect the rotational motion of the egg. The period of the oscillation was recorded. The results show that the moment of inertia of raw eggs and hard boiled eggs are different and both are proportional to  $MR^2$ . The ratio of  $MR^2$  of liquid core (uncooked part) to the whole egg has a linear relationship to the  $\frac{T^2 - T_0^2}{MR^2}$  and this value can be used to determine the degree to which an egg is cooked.

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