Question.

How does the length of a pendulum string affect the frequency of oscillation?

Solution

The period of oscillation thread pendulum depends on its parameters as follows:

$T = 2\pi\sqrt{\frac{l}{g}}$ (l – the length of a pendulum, g – acceleration due to gravity).

In turn, the oscillation frequency is related to the period as $f = \frac{1}{T}$.

Thus, we have $f = \frac{1}{2\pi}\sqrt{\frac{g}{l}}$.

Answer: $f = \frac{1}{2\pi}\sqrt{\frac{g}{l}}$ or $f \square \frac{1}{\sqrt{l}}$.