

Snail-powered science: hands-on biology for active classrooms

Activity 2 answers sheet

What is the purpose of measuring righting behaviour in snails?

Righting behaviour is the ability of a snail to flip itself back onto its ventral (foot) side after being turned upside down. It is a common behavioural test in invertebrates used to assess motor function, coordination and stress response. Delayed righting times may indicate that the animal is experiencing stress, fatigue, or exposure to unfavourable environmental conditions.

Why do you think fish water might influence the snails' behaviour differently compared to culture water?

Fish water contains chemical signals (kairomones) released by fish, which snails interpret as predator cues. This “smell of predator” triggers anxiety-like responses, causing faster righting times. It is an adaptive defensive behaviour.

How might differences between individual snails affect the interpretation of results?

Just like humans, animals show individual variation in behaviour. Some snails may naturally right themselves faster or slower than others. Discussing this helps students understand biological variability, why scientists use replicates, and how careful design and statistics are needed to distinguish true environmental effects from natural differences between individuals.

What other types of snail behaviour could be studied to assess the health of freshwater ecosystems?

Locomotor activity (speed of movement), respiration patterns (pneumostome opening frequency), feeding (radula scraping rate), or egg laying. All are sensitive to environmental stressors.

How could the results of this experiment be connected to human health, particularly mental well-being?

The faster righting behaviour of snails in response to predator cues illustrates how environmental stress can trigger anxiety-like responses in animals. This parallel can be used to discuss how stressors in human environments – such as pollution, noise, or social pressure – may also affect behaviour and mental health. Making this connection helps students understand how simple biological models can provide powerful insights into broader questions of well-being and resilience.

What ethical responsibilities do scientists have when studying living snails? And how can experiments be designed to respect animal welfare while still producing meaningful data?

Scientists must avoid harming animals and design experiments that respect their wellbeing. Using gentle methods, few animals, and short observation times helps balance learning with animal welfare.