Compare hills without flattening the context

Grade-adjusted pace translates slope into a flat-ground energy-cost comparison. It is useful context, but it does not turn a trail into a track.

Worked example

> Two runs can have the same modeled flat-equivalent pace and feel different. The Minetti energy-cost model does not measure technical footing or the fatigue carried into a descent.

Your turn

1. Record distance, elapsed time, grade and direction of travel.
2. Write the model’s flat-equivalent output beside the actual pace.
3. List what the model omits: footing, wind, fatigue and downhill muscle loading. How did your actual effort compare?

What I observed / what I will check next

Constant-slope model. Terrain and fatigue still matter. Educational worksheet, not an individualized training prescription.

Method / rules: Minetti running-energy-cost study.

Full explanation, current sources and related tools:
brenoamelo.com/calculators/grade-adjusted-pace

Prepared 26 October 2026 · Keep personal notes private. Discuss your goal with breno@brenoamelo.com.