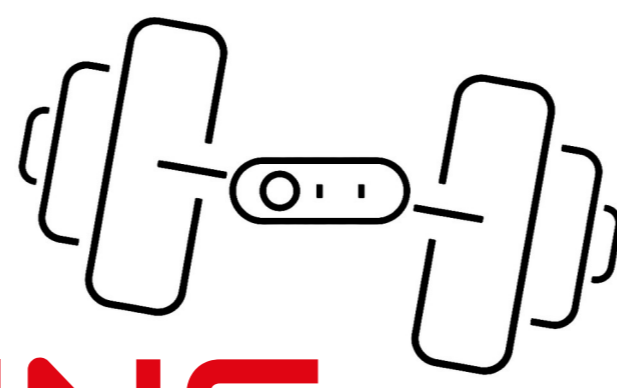
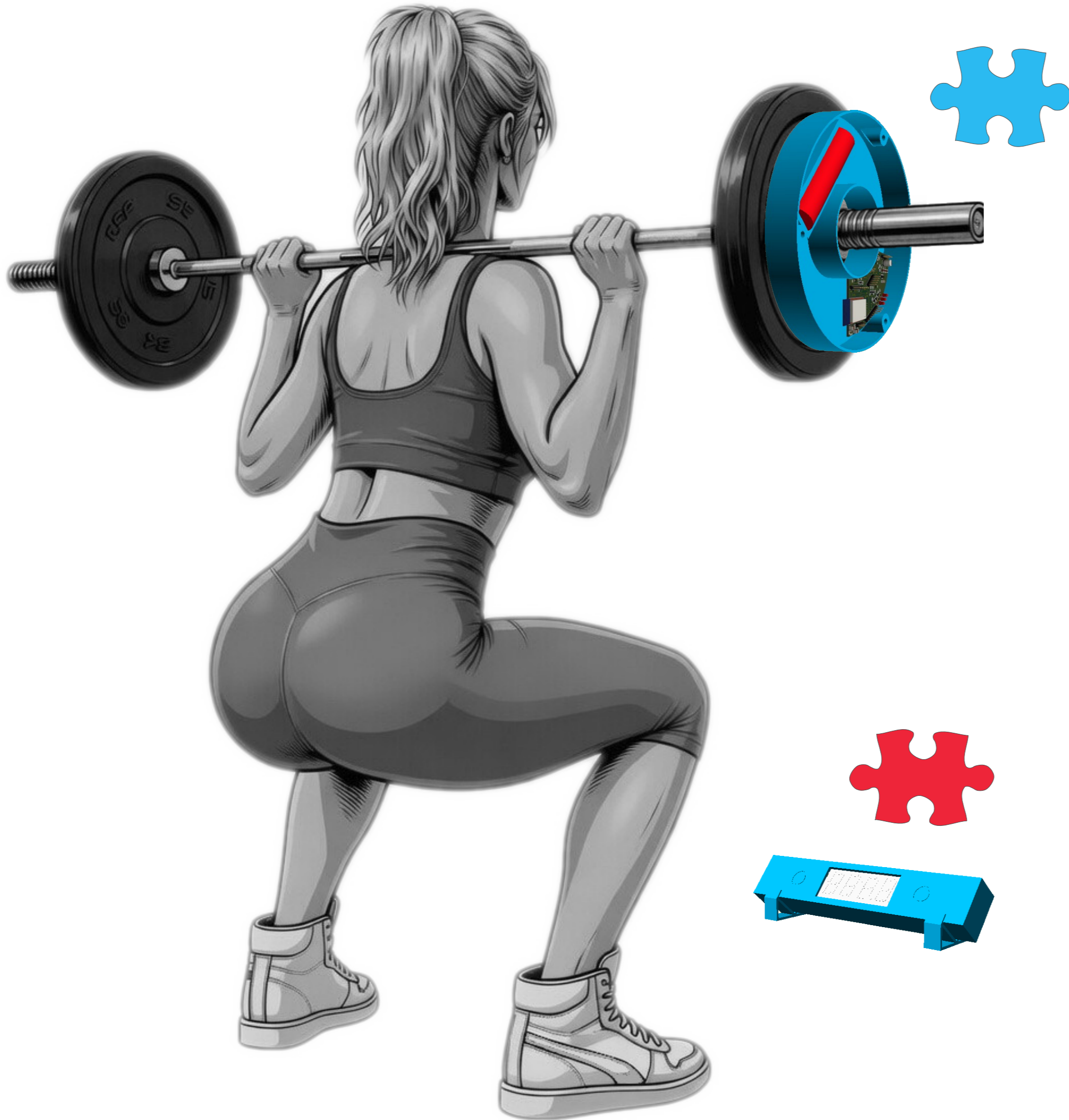


SMART PLATE FOR POWERLIFTING

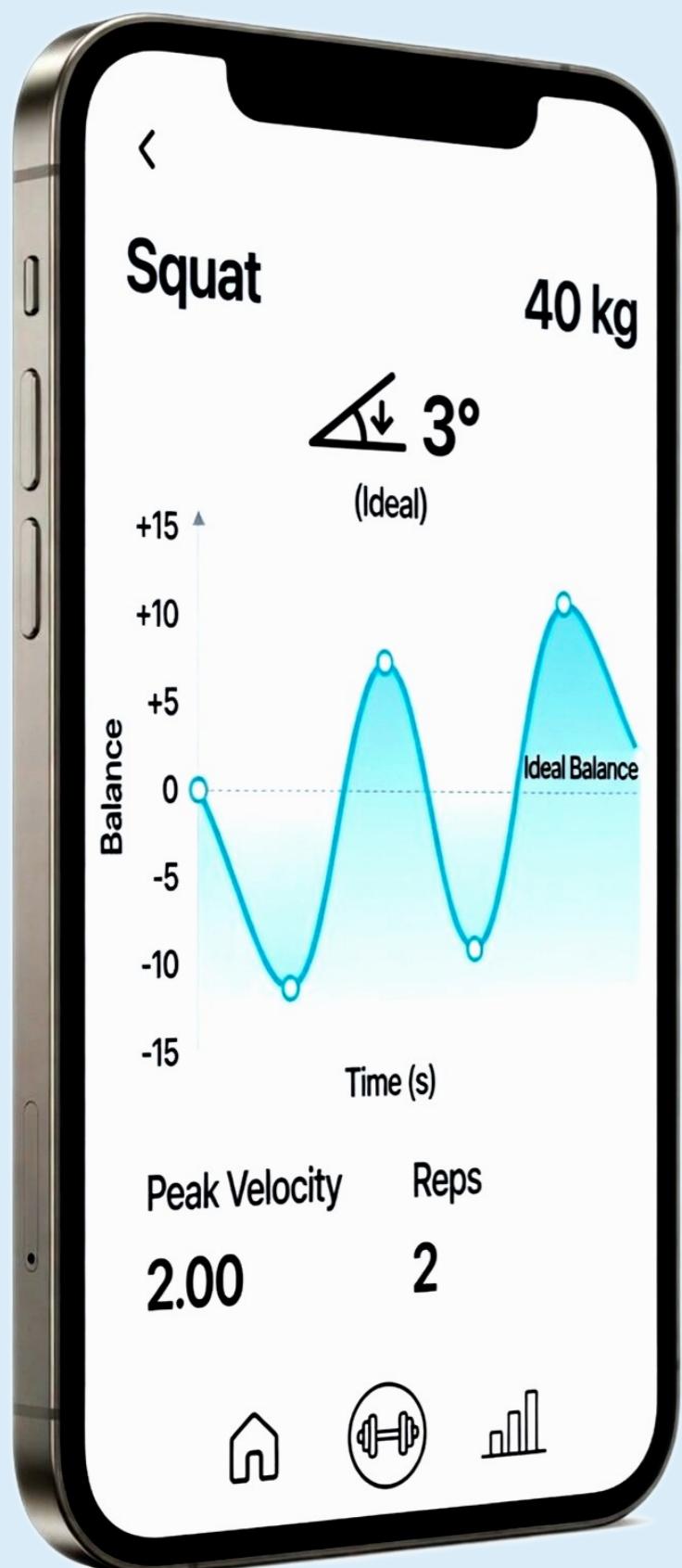


Author Bc. Petr Stehlík
 Supervisor doc. Ing. Zdeněk Vašíček, Ph.D.



– NO MORE PAIN JUST ENJOY GAIN –

MOBILE APPLICATION



Records movement for future analysis

Modern and intuitive web user interface

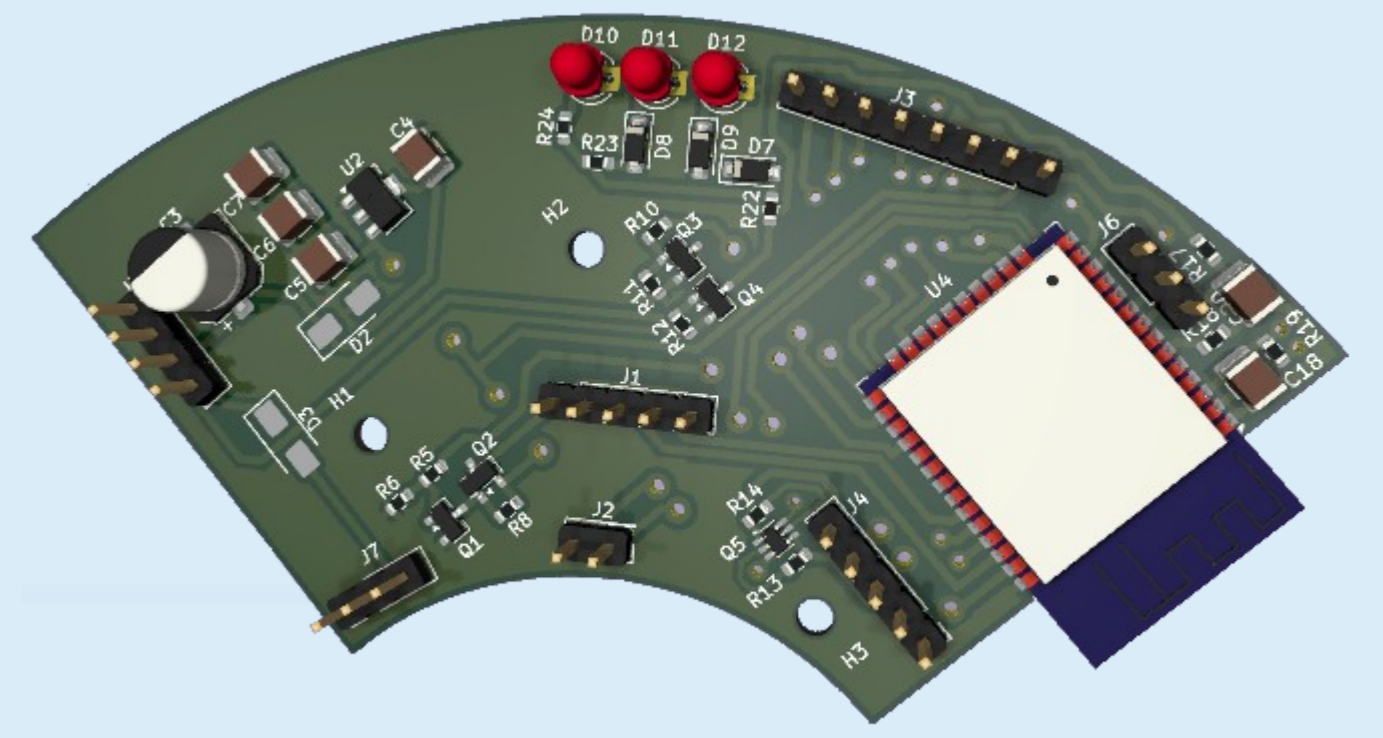
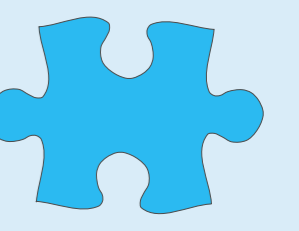
Interactive graphs without external libraries

No installation nor Internet needed

Advanced analysis to help train like an athlete



SMART SENSOR



IMU Bosch BMI160 sensor

Accelerometer

Gyroscope

Advanced filter fusion

Barbell balance and movement

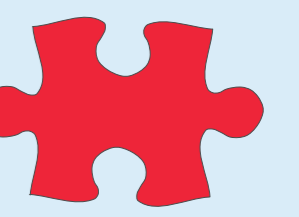
Espressif ESP32

200Hz sampling rate

Long battery life
deep sleep optimization

Small and 0.5kg weight

WIRELESS DISPLAY



Optional equipment

Quick feedback

Counts good reps
during exercise

Shows actual
balance state

Alerts you
when not balanced

ESP NOW

ANNOTATED DATASET

Squat exercise

For future algorithm
improvements

From beginners
to advanced athletes

Results suggest
importance for beginners