**Push-Up Counter**

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**ABSTRACT**

**INTRODUCTION**

A Push-up is a physical exercise performed in a prone position by raising and lowering the body using the arms. It is a basic exercise used in bodybuilding or physical education; more commonly seen in military physical trainings and punishments.

Push-up counters are made in order to accurately record the number of push-ups done by a person and to help a person monitor the progress of his training. However, not all ways of counting push-ups are accurate due to design flaws.

As such, the members of this project aim to design and build a push-up counter using Arduino that is able to mitigate inaccuracies of existing push-up counters.

**CASE STUDIES**

Case studies of existing push-up counters are done in order to identify inaccuracies present in counting push-ups.

IPPT/Fist method:  
  
This method of counting push-ups requires the tester (person recording the push-ups) to place his fist on the ground below of the center of the participant’s (person doing the push-ups) chest when doing push-ups. The participant’s chest has to touch the tester’s fist for a push-up to be valid.

As the sizes of a fist varies with testers, inaccuracies in results may arise as the distance the participant has to lower his chest changes.

Furthermore, this method requires 2 people (participant & tester). If a person does push-ups alone and counts his push-ups, his results might not be accurate as he might not have done valid push-ups throughout.

Push-up counter devices:

These devices record push-ups by being placed on the ground under the center of the person’s chest.

Inaccuracies result from the devices being unable to detect the posture of the person, a person may not always have to do push-ups correctly for the device to record it as valid. For example, a person’s back may not be straight when doing push-ups, which might make it easier for the person to do push-ups.

Push-up counter mobile applications:

Push-up counters also come in the form of mobile applications. The mobile applications make use of the infrared proximity sensors on the phone to record push-ups. By constantly sensing the light levels of its surrounding, it can determine if a person has completed a push up.

When placed in different light conditions, its ability to accurately record push-ups is affected as it may use fixed light level thresholds to determine when a person lower his chests and comes back up.

**SOLUTION DESIGN**

Components of the push-up counter:

-Arduino Uno R3

-Ultrasonic sensor

-Buzzer

-LCD Display

-Flex sensor

-circuit diagram/ schematics

-logic tree

**RESULTS & DISCUSSION**

**CONCLUSION**

**REFERENCES**

**ACKNOWLEDGEMENTS**

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