Investigation into factors affecting reaction time

Introduction

If you notice a ball moving towards your head, the time it takes from when you first notice the ball to when your arm reaches up to catch it is an example of reaction time. Even though nervous impulses travel very quickly through your nervous system, your body doesn't react instantly. In this activity, you will conduct a simple, measurable experiment to study reaction time and investigate the hypothesis that reaction time improves with practice.

Apparatus

30 cm ruler

Diagram of Apparatus

1. Ask your first volunteer to sit in the chair with good upright posture and eyes looking across the room.
2. Have the volunteer place their forearm (the part of the arm from elbow to hand) so it extends over the edge of the table.
3. Ask the volunteer to place their thumb and index (pointer) finger on either side of the bottom of the vertically placed ruler. The number "1" should be on the bottom, the "30" near the top.
4. Let your volunteer practice holding the ruler with those two fingers.
5. Now, ask your volunteer to remove their fingers from the ruler while you continue to hold it so that the bottom of the ruler is at a height of 2 cm above the fingers.
6. Tell your volunteer that you will release the ruler without warning. Their job will be to catch it with their thumb and forefinger as soon as they sense it dropping.
7. Drop the ruler. When your volunteer catches it, record the number on the ruler displayed just over the thumb. The lower the number, the faster the reaction time.
8. Conduct five trials with the same volunteer, dropping the ruler from 2 cm above their fingers each time.
9. Repeat the experiment with at least five other volunteers and record your results in a suitable table

Analysis

1. Use the conversion table below to convert the distance measured to a reaction time for each volunteer

Catch distance (cm)	Reaction time (milliseconds)	Catch distance (cm)	Reaction time (milliseconds)
1	50	16	180
2	60	17	190
3	701	18	190
4	80	19	200
5	90	20	200
6	100	21	210
7	120	22	210
8	130	23	220
9	140	24	220
10	140	25	230
11	150	26	230
12	160	27	230
13	160	28	240
14	170	29	240
15	170	30	250

2. Discuss the extent to which your results support the hypothesis.