

# A STUDY OF THE RELATIVE AMOUNT OF TIME OF DIFFERENT TYPES OF PITCHED BALLS

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In order to throw some light upon the question of the amount of time consumed in throwing a ball overhand, underhand and sidearm, this experiment was performed.

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## APPARATUS

1. A Synchronous Timer measuring time in hundredths of a second.
2. A make relay and a break relay.
3. A target 3 feet by 4 feet made of triple weight canvas.
4. A regulation baseball to which a small piece of tin foil was attached so that a complete circuit was made when the ball was held by the pitcher.
5. A rubber glove to prevent a shock.
6. Twenty-five feet of single strand copper wire and twenty feet of rubber coated wire.
7. Six dry cell batteries.
8. Aluminum foil.

## PROCEDURE

The Timer is hooked to a 110 volt source and the pitcher grasps the ball thus forming a complete circuit and also keeping the break relay open. At the same time the relay in the target circuit is on the make because of a complete circuit established by a piece of aluminum foil which connects the ends of the wires. As a result the target relay is closed and the ball relay open as the pitcher prepares to deliver the ball. When the ball is released, the ball relay circuit is broken and the Timer starts. The ball on hitting the canvas tears the aluminum foil and stops the clock.

Twenty-one members of high school, college, amateur, semi-professional and professional teams took part in this experiment. All the subjects were pitchers. Seven were natural overhand throwers, seven natural sidearm throwers and seven natural underhand throwers.

The men were cautioned to throw as hard as possible on every pitch. Each participant threw five overhand fast, five overhand curve, five sidearm fast, five sidearm curve, five underhand fast and five underhand curve. If a man indicated he was becoming fatigued, the experiment was stopped and he reported on another day to continue.

This experiment was conducted in the basement of a gymnasium which had a dirt floor. It was felt that atmospheric conditions would be the same from day to day inside. A home plate and pitching rubber were inserted sixty feet six inches apart which is regulation pitching distance.

## RESULTS

1. Average time of subjects overhand fast was .582 ( $\pm$ .0047) seconds.
2. Average time of sidearm fast was .596 ( $\pm$ .0056) seconds.
3. Average time of underhand fast was .628 ( $\pm$ .0051) seconds.
4. Average time of overhand curve was .651 ( $\pm$ .0053) seconds.
5. Average time sidearm curve was .660 ( $\pm$ .0057) seconds.
6. Average time underhand curve was .686 ( $\pm$ .0054) seconds.