

A/B Testing for MuscleHub

How do fitness tests affect membership purchases?

Introduction

For this experiment, MuscleHub split prospective new members into two groups of approximately the same size:

- Group A (2,504) was asked to take a fitness test with a personal trainer
- Group B (2,500) was allowed to proceed directly to the application

The purpose of this experiment is to analyze whether the fitness test had any effect on the likelihood that a given prospective member would start an application and purchase a full membership.





Quantitative Statistical Analysis

Methods

We analyzed the numerical results of the experiment in three different ways:

- First we determined how many of the total in each group started an application
- Next, from the subset of users who actually started an application, we looked at how many purchased a membership
- Finally, we identified the overall numbers in each group who ultimately purchased a full membership

In order to test for statistical significance in each of these three different cohorts, we used a “Chi Square” test.

This type of test looks at whether the difference in results of an experiment conducted on two discrete groups is statistically significant.

If the resulting p-value is less than 0.05, then we reject the null hypothesis.

(Here, the null hypothesis posits that there is no significant difference between the two groups.)

Quantitative Results Part 1

For our first test, we looked at how many prospective members in each group picked up an application:

- Group A (Fitness Test)
 - 250 out of 2,504 picked up an app
 - 9.98% conversion
- Group B (No Fitness Test)
 - 325 out of 2,500 picked up an app
 - 13.00% conversion

After running these numbers through our Chi Square test, the resulting p-value was:

- 0.00096478276007223038

Given that this number is well below our threshold of 0.05, we can conclude that there *is* a statistically significant difference between the two groups.

Since the conversion rate for those prospects who took the fitness test was lower, this means that taking the fitness test makes a given prospect *less likely* to pick up an application.

Quantitative Results Part 2

For our second test, we analyzed only those prospective members who picked up an application, and whether or not they eventually purchased a membership:

- Group A (Fitness Test)
 - 200 out of 250 became members
 - 80.00% conversion
- Group B (No Fitness Test)
 - 250 out of 325 became members
 - 76.92% conversion

Sending these numbers through our Chi Square test resulted in the following p-value:

- 0.43258646051083327

Since this number much higher than 0.05, we can conclude that there ***is not*** a statistically significant difference between the two groups.

Although there was a higher conversion rate for those who took the fitness test, this means that for prospects who picked up an application, the fitness test did not make them any more or less likely to become members.

Quantitative Results Part 3

In our third and final test, we again looked at the total number of prospects, and analyzed whether the fitness test made them more or less likely to become members:

- Group A (Fitness Test)
 - 200 out of 2,504 became members
 - 7.99% conversion
- Group B (No Fitness Test)
 - 250 out of 2,500 became members
 - 10.00% conversion

After running this final set of numbers through our Chi Square test, the resulting p-value was:

- 0.014724114645783203

This value is below the target threshold of 0.05, therefore we can conclude that there *is* a significant difference between the two groups.

Given that the conversion for those who took the fitness test was in fact lower, this furthermore indicates that the fitness test makes a prospect *less likely* to become a member of MuscleHub



Qualitative Anecdotal Analysis

Interview Summary

In addition to the numerical results of the A/B test, we also received four interviews from prospective members. To briefly summarize their sentiments:

- Prospect #1 took the fitness test and cited it as a reason for joining MuscleHub.
- Prospect #2 did not take the fitness test, and also did not join the gym. She did, however, cite a fitness test at another gym, LiftCity, as a deterrent for joining there. She cited the lack of a fitness test at MuscleHub as a net positive factor.
- Prospect #3 took the fitness test and “regretted it.” He did not state whether or not he became a member of MuscleHub.
- Prospect #4 did not take the fitness test, and did end up joining MuscleHub. He also cited the fitness test at LiftCity as a deterrent, contrasting that experience with the lack of a fitness test at MuscleHub as a positive factor that led to him purchasing a membership.

Qualitative Results

While a sample size of only four subjective and qualitative interviews is not enough data to draw any major conclusions, the findings from these interviews do support the results from our quantitative statistical analysis:

- Only one of the respondents took the fitness test and became a member
- One of the respondents cited the fitness test at MuscleHub as a negative factor
- Two of the respondents cited the lack of a fitness test at MuscleHub as a positive factor
- The same two respondents from the previous point also cited the inclusion of a fitness test at a competing gym, LiftCity, as a negative factor

That is to say: Based on this anecdotal evidence, a fitness test is generally a *negative* factor when a given prospect is deciding whether or not to purchase a membership at a gym.



Conclusion & Recommendation

Final Analysis

The results from our quantitative analysis reveal that those prospective members who take the fitness test both are less likely to pick up an application, and are less likely to eventually purchase a membership. The resulting p-values from Chi Square tests of these scenarios reveal that there is a statistically significant probability that the fitness test was the determining factor in the lower conversion rates between the prospects that took a fitness, as opposed to those that did not. When restricting our analysis to only those prospects who picked up an application, although those who took the fitness test had a slightly higher conversion rate, the resulting p-value was too high to indicate any statistical significance.

Furthermore, the anecdotal evidence provided in the form of interviews also supports the conclusion that a fitness test is generally a deterrent for prospects to purchase a gym membership.

Final Analysis Cont'd.

In conclusion, it is our recommendation that MuscleHub should eliminate the fitness test.

Based on our findings, we believe this course of action will lead to a higher conversion rate for prospective members to purchase a full membership at MuscleHub.

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