

# Improving Diverse Visual Representation in Doctor of Physical Therapy (DPT) Education

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## Background

Research indicates implicit racial bias exists in the visual representation within medical education including course materials, lecture materials, case studies, and textbooks, with a notable underrepresentation of individuals from minoritized backgrounds compared to the general population. This lack of representation may perpetuate existing health disparities in the United States. While numerous studies have examined racial bias in medical education, there is a lack of research in Physical Therapy education. Many existing studies merely identify the issue without offering practical solutions or reevaluating the content. Our research aims to address this gap by collecting data to highlight the lack of diversity in the curriculum. Our ultimate goal is to raise awareness and implement tangible changes, such as incorporating more inclusive images, to better reflect the communities we serve.

## Research Objectives

1. Evaluate the current diversity and representation within PowerPoint images and videos utilized in PTHMS presentations, considering demographic factors such as race, gender, and skin type.
2. Identify biases and instances of underrepresentation among specific demographic groups depicted in NUPTHMS PowerPoint presentations, examining potential patterns of overrepresentation or stereotyping.
3. Raise awareness regarding the insufficient diversity in visual imagery within physical therapy education, and propose actionable solutions to enhance representation.
4. Recommend future research endeavors, including surveys of faculty and alumni, to gain insights into their perspectives on the diversity of representation within visual imagery in the PTHMS curriculum.

## Methods

Four independent raters analyzed PowerPoint presentations and videos from three courses within Northwestern University's Doctor of Physical Therapy (DPT) program. They assessed physical characteristics including assumed gender, skin type, assumed race, body type, and body expression (e.g., facial hair, piercings, tattoos). Skin types were classified using the Fitzpatrick scale. In instances of disagreement, raters conferred with a third party to achieve consensus. Images of human subjects with visible skin were included, while those of non-human subjects or images where analysis was impractical were excluded. To establish interrater reliability, each rater evaluated a set of 30 selected photos depicting individuals with diverse physical characteristics relevant to the study. Inter-rater reliability was assessed to measure agreement among the raters.

## Table Results

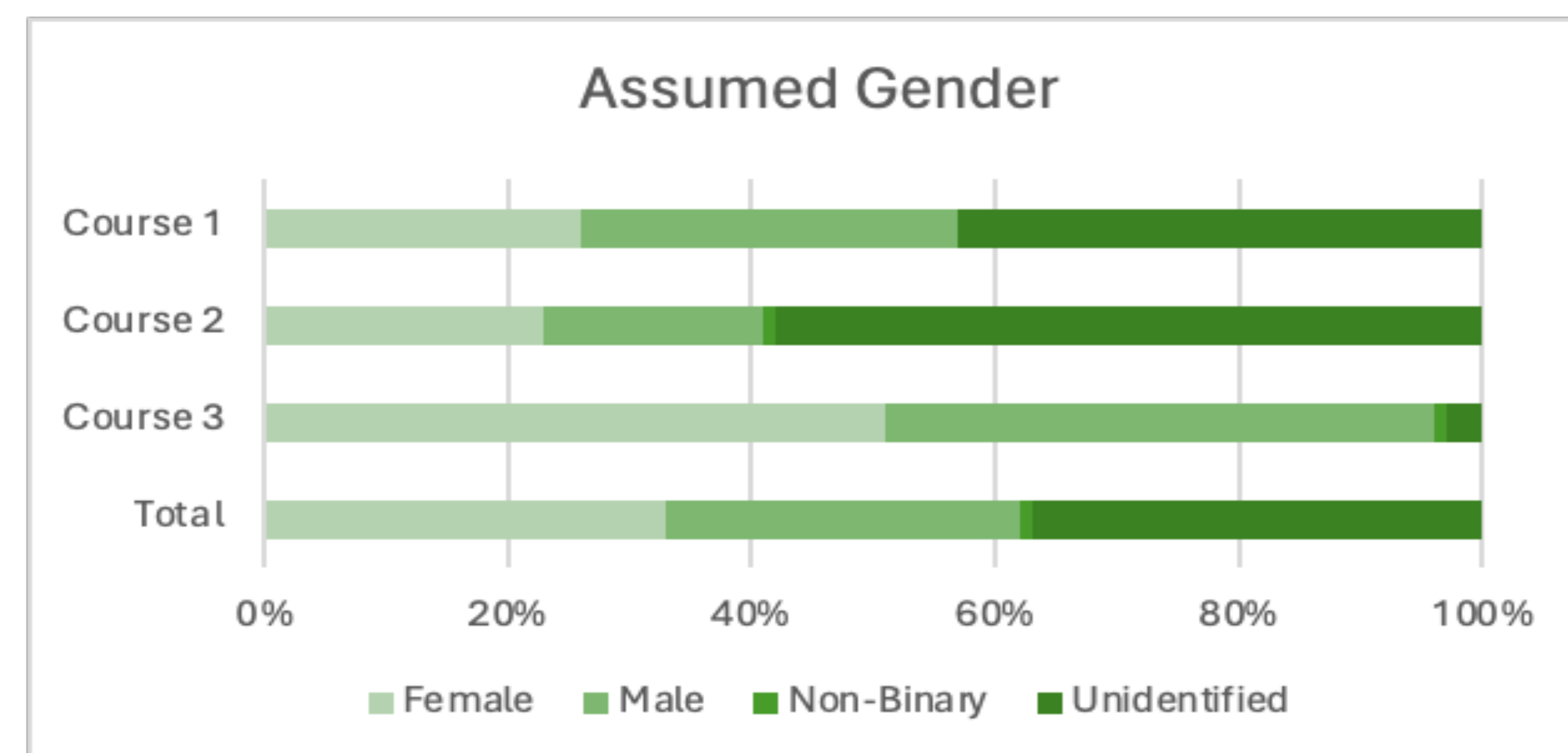


Table 1: Individual and total results of assumed gender based on course photos and team consensus.

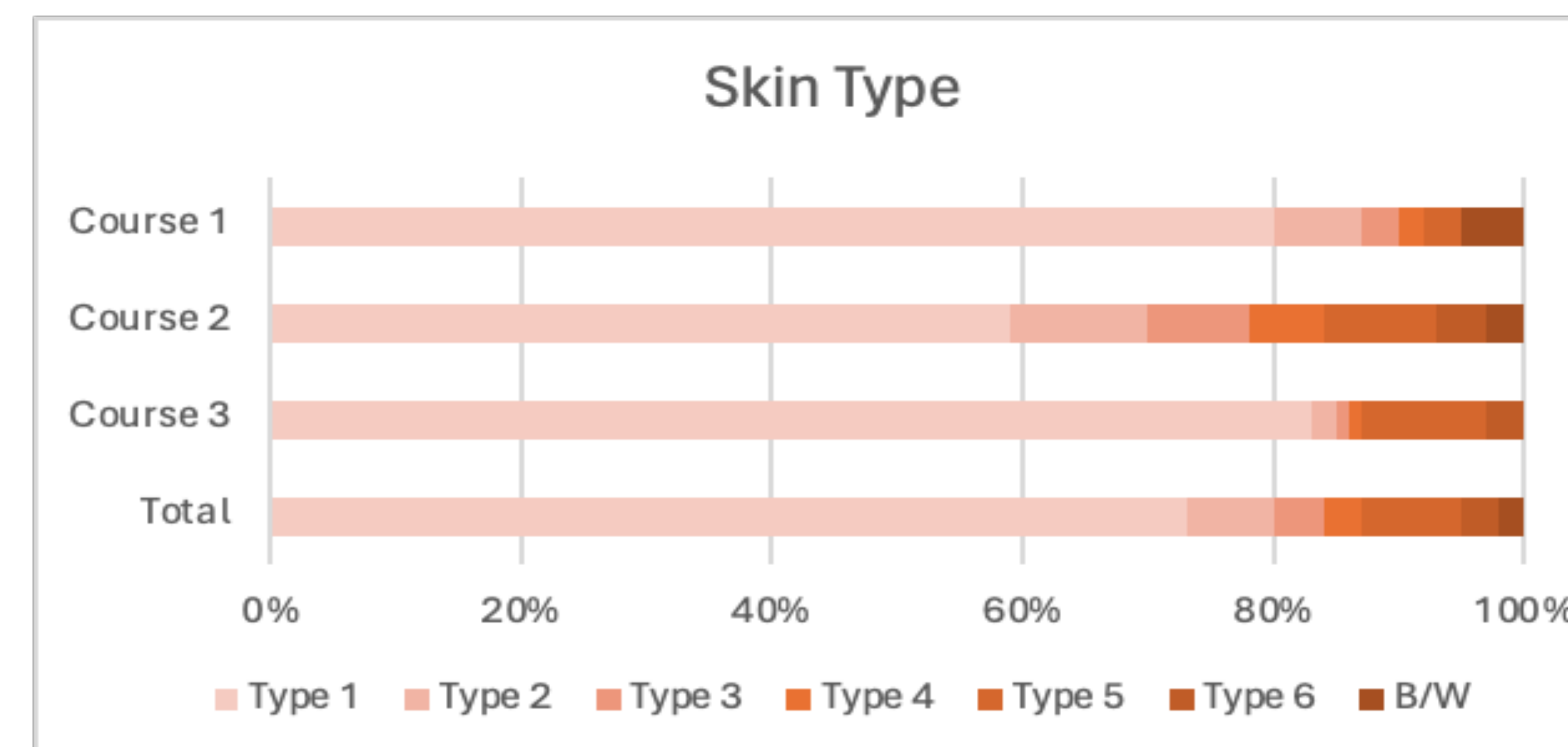


Table 2: Individual and total results of skin type based on course photos, the Fitzpatrick Scale and team consensus.

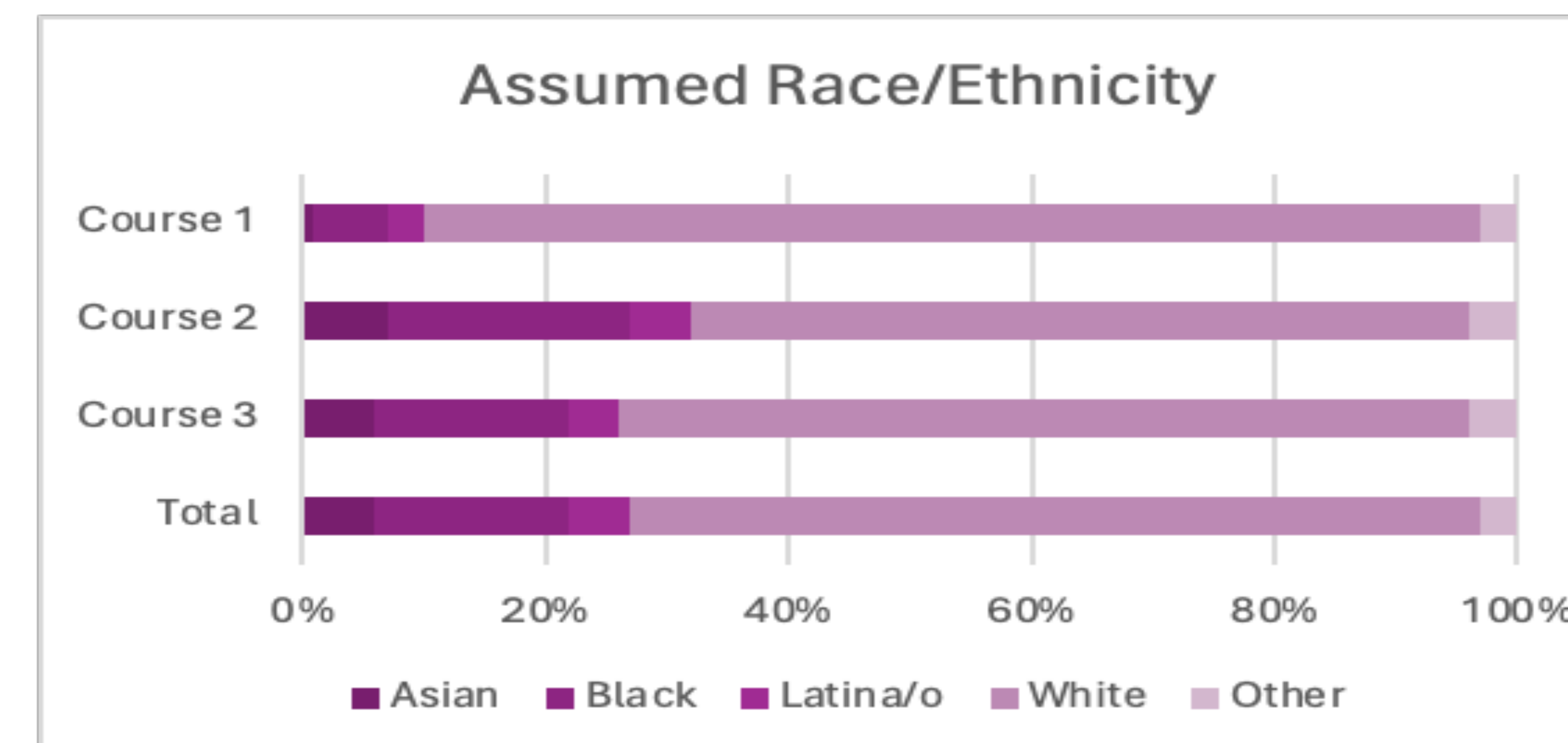


Table 3: Individual and total results of assumed race/ethnicity based on course photos and team consensus.

## Figure 1. Fitzpatrick Skin Type Scale



## Results

We examined a total of 1,514 images and videos across three courses in the DPT curriculum at Northwestern University. In our analysis of gender representation, we found that 33% were female, 29% were male, and 1% were identified as non-binary, while 37% were categorized as unidentified. The majority of the unidentified category consisted of infants for whom gender identification based on visual representation was not feasible. Skin type was assessed using the Fitzpatrick scale, with the following distribution among the analyzed images and videos: 73% were type 1, 7% were type 2, 4% were type 3, 3% were type 4, 8% were type 5, and 3% were type 6. Additionally, 2% of the content comprised black and white images. Regarding assumed race/ethnicity, 6% were identified as Asian, 16% as Black, 5% as Latina/o, 70% as White, and 3% fell into the 'other' category. Analysis of body type revealed no significant variation, with 94% categorized as average weight. Lastly, body expressions were examined, revealing that 4% of the total content displayed variations in body language and expression.

## Discussion

Limitations in our research include potential implicit biases when applying the Fitzpatrick scale and assumed categories when identifying images. Despite our efforts to mitigate these biases, we acknowledge their potential influence on our results. While our current research involves aggregate data, there are continued opportunities to analyze the data more deeply, to determine additional themes and biases. Through continued analysis, we hope to refine our findings and contribute to a more inclusive educational environment. In our ongoing research, we aim to develop a comprehensive repository of diverse images to improve visual representation in our didactic education.

## Conclusions

In conclusion, our analysis of images and videos in the DPT curriculum at Northwestern University reveals lack of diverse gender identities, predominantly type 1 skin tones, and decreased notable presence of various racial and ethnic backgrounds. Additionally, most individuals depicted have an average body weight, and there are subtle variations in body expressions. These findings stress the ongoing need for inclusive educational materials to foster a holistic and equitable learning environment.

## References

