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# Import required libraries
import matplotlib.pyplot as plt
import seaborn as sns

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# Background:
# This chart was developed to visualize individual responses to a key
question from the high-heat survey phase
# in the study on construction workers' mental and physical well-being
under extreme temperature conditions.

# Survey Context:
# One of the core Likert-scale items in the survey asked:
# "On a scale of 1 to 5, how physically fatigued do you feel after work
on a typical hot day?"
# (1 = Not at all fatigued, 5 = Extremely fatigued)

# Purpose:
# This chart helps to show the variability in fatigue levels across
individual participants, making it easier to
# interpret the extent to which workers are affected. It complements
statistical summaries by providing a
# participant-level view of the data.

# Visualization:
# A blue-green Viridis gradient was applied for aesthetic continuity
across charts in the study.
# Each participant (P1–P9) is plotted with their corresponding Likert-
scale fatigue score.
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# Data
participants = ['P1', 'P2', 'P3', 'P4', 'P5', 'P6', 'P7', 'P8', 'P9']
fatigue_scores = [4.0, 4.5, 4.0, 3.5, 4.0, 4.5, 5.0, 4.0, 3.5]

# Color palette for gradient
colors = sns.color_palette("viridis", len(participants))

# Plot
plt.figure(figsize=(10, 6))
bars = plt.bar(participants, fatigue_scores, color=colors,
edgecolor='black')

# Labels and title
plt.xlabel('Participant ID')
plt.ylabel('Fatigue Level (1–5)')
plt.title('Fatigue Levels Among Participants (Likert Scale 1–5)')

# Annotate each bar with its value
for bar, score in zip(bars, fatigue_scores):
    plt.text(bar.get_x() + bar.get_width() / 2, score + 0.05,
f'{score:.1f}',
             ha='center', va='bottom', fontsize=10)
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plt.tight_layout()
plt.show()
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