**Gait Recording Guidelines for ASD Analysis**

**Camera Position and Viewing Angle**

**Optimal Camera Positions**

**1. Sagittal View (Side View) - RECOMMENDED**

Camera ←→ 3-4 meters ←→ Walking path

↑ ↓ (Subject walks)

* **Distance**: 3-4 meters from the walking path
* **Height**: 1.2-1.5 meters (at center of mass level)
* **Angle**: 90° perpendicular to walking direction
* **Advantages**: Better analysis of step length, cadence, joint angles

**2. Frontal View - ADDITIONAL**

Camera

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←←←←← Subject walks toward camera ←←←←←

* **Distance**: 4-5 meters
* **Advantages**: Analysis of stride width, symmetry, lateral movement

**Technical Specifications**

**Camera Settings**

* **Frame Rate**: 30 FPS minimum (60 FPS preferred)
* **Resolution**: 1920x1080 (Full HD) minimum
* **Format**: MP4, AVI, MOV
* **Duration**: 45-90 seconds
* **Zoom**: Full body visible with margin space

**Step Count Requirements**

* **Minimum**: 10-15 steps per foot
* **Ideal**: 20-30 steps per foot
* **Walking path**: 8-12 meters length
* **Repetitions**: 2-3 trials for reliability

**Recording Environment**

**Lighting Setup**

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Uniform lighting

👤 Subject

* **Uniform lighting** without shadows
* **Natural light** or LED panels
* **Avoid**: Backlighting, direct sunlight

**Background**

* **Simple, solid background** (white, gray)
* **No decorative elements** or distractions
* **Matte surface** (not glossy)

**Floor Surface**

* **Level surface** without obstacles
* **Non-slip** material
* **Consistent color** (preferably dark)

**Subject Instructions**

**Clothing Requirements**

GOOD: BAD:

- Fitted clothing - Loose clothing

- Dark colors - Very bright colors

- Athletic shoes - Skirts, dresses

- Shorts/leggings - High heels

**Walking Instructions**

* **Natural gait** (not too slow or fast)
* **Look ahead** (not at camera)
* **Relaxed arms** at sides
* **Straight line** walking
* **Continuous movement** (no pauses)

**Recording Protocol**

**Procedure**

1. Preparation (2-3 minutes warm-up)

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2. Test walk to check setup

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3. First recording (sagittal view)

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4. Break 1-2 minutes

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5. Second recording (repeat)

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6. Optional: Frontal view

**Timeline**

* **Total time**: 10-15 minutes
* **Recording**: 45-90 seconds per trial
* **Breaks**: As needed

**Special Considerations**

**Children with ASD**

* **Shorter trials** (30-45 seconds)
* **More frequent breaks**
* **Familiar environment** if possible
* **Parent/caregiver presence**
* **Reduced noise levels**

**Motor Difficulties**

* **Shorter path** (5-6 meters)
* **Walking aids** if needed
* **Safe area** around walking path

**Quality Control**

**Acceptance Criteria**

GOOD RECORDING:

- Full body visible

- Stable camera

- Clear image without blur

- Uniform lighting

- ≥10 complete steps

REJECT:

- Cropped limbs

- Camera shake

- Blurry image

- Shadows on body

- <8 steps

**Setup Checklist**

□ Camera on stable tripod

□ Background arranged

□ Lighting checked

□ Subject in appropriate clothing

□ Walking path clear

□ Camera memory sufficient

□ Test recording completed

□ Camera settings verified

**Recommended Equipment**

* **Camera**: DSLR, smartphone (iPhone 12+, Samsung S21+), or 1080p+ webcam
* **Tripod**: Stable, adjustable height
* **Lighting**: LED panels or natural window light
* **Measurement**: Laser meter for distances
* **Background**: Portable backdrop or white wall

**Data Collection Standards**

**Minimum Requirements**

* **Video length**: 45 seconds minimum
* **Steps captured**: 10 steps per foot minimum
* **Frame rate**: 30 FPS minimum
* **Resolution**: 1080p minimum
* **File format**: MP4 preferred

**Optimal Standards**

* **Video length**: 60-90 seconds
* **Steps captured**: 20-30 steps per foot
* **Frame rate**: 60 FPS
* **Resolution**: 4K if available
* **Multiple angles**: Sagittal + frontal views

**Common Recording Errors**

**Technical Issues**

* **Camera shake**: Use tripod, avoid handheld
* **Poor lighting**: Ensure uniform, sufficient illumination
* **Wrong angle**: Maintain perpendicular view for sagittal
* **Insufficient duration**: Record full walking sequence
* **Low resolution**: Use highest quality settings available

**Subject-Related Issues**

* **Inappropriate clothing**: Avoid loose, reflective materials
* **Unnatural gait**: Allow warm-up, encourage natural walking
* **Looking at camera**: Instruct to look ahead
* **Incomplete steps**: Ensure full walking cycles captured
* **Multiple people**: Record one subject at a time

**Post-Recording Verification**

**Immediate Checks**

1. **Playback quality**: Review footage immediately
2. **Full body visible**: Check no limbs are cropped
3. **Step count**: Verify sufficient steps captured
4. **Image clarity**: Ensure no motion blur
5. **Lighting consistency**: Check for shadows or glare

**File Management**

* **Naming convention**: SubjectID\_Date\_Trial\_View.mp4
* **Backup copies**: Save in multiple locations
* **Metadata recording**: Document camera settings, conditions
* **Quality assessment**: Rate each recording for analysis suitability

**Troubleshooting Guide**

**Poor Pose Detection**

**Problem**: MediaPipe fails to detect landmarks **Solutions**:

* Improve lighting conditions
* Ensure subject contrast with background
* Check for loose clothing interference
* Verify camera resolution and frame rate

**Incomplete Gait Cycles**

**Problem**: Insufficient steps for analysis **Solutions**:

* Extend recording duration
* Use longer walking path
* Encourage continuous walking
* Plan multiple short trials if needed

**Camera Setup Issues**

**Problem**: Suboptimal viewing angle or distance **Solutions**:

* Use measuring tape for exact distances
* Mark optimal camera positions
* Test different heights for best view
* Ensure entire walking path is visible

These guidelines ensure high-quality data collection for accurate gait analysis and reliable ASD detection results.