



Patient Collection Form

Low Back Pain System - Data Structure Documentation

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Overview

The patient collection form collects comprehensive clinical data across 7 major sections, supporting both manual entry and AI-assisted OCR extraction.

70+

Total Data Fields

7

Main Sections

4

Required Fields

8

Nested Objects

Key Features

- OCR Integration:** Automated text extraction from medical record images
- AI Posture Analysis:** Real-time ROM measurement using MediaPipe pose detection
- Interactive Body Map:** SVG-based pain area selection with 20 anatomical regions
- Conditional Logic:** Dynamic field display based on user selections
- Multi-platform Support:** Optimized for mobile and desktop data collection
- Auto-save:** Real-time data synchronization with backend database

1 Basic Information (基本信息)

Essential patient demographics and contact information

Field Name	Field Key	Type	Label (中文)	Status
Name	name	Text	患者姓名	Optional
Study ID	study_id	Text	Study ID	Required
Phone	phone	Text	联系电话	Optional
Age	age	Number	年龄	Required
Gender	gender	Select	性别 (男/女)	Required

2 Medical History (病史资料)

Clinical history, symptom characteristics, and previous treatments

Field Name	Field Key	Type	Label (中文)	Status
Chief Complaint	chief_complaint	Textarea	主诉 (supports OCR)	Optional
History Type	history_type	Select	现病史类型 (首次发作/复发)	Optional
First Onset Date	first_onset_date	Date	初次发作日期	Optional
Pain Type	pain_type	Select	疼痛类型 (局部/放射/牵涉)	Optional
Aggravating Factors	aggravating_factors	Textarea	加重因素	Optional
Relieving Factors	relieving_factors	Textarea	缓解因素	Optional
Has Radiation	has_radiation	Boolean	是否有放射痛	Optional
Radiation Location	radiation_location	Text	放射至何处	Conditional
Previous Treatment	previous_treatment	Textarea	其他已接受治疗	Optional
Condition Progress	condition_progress	Select	病情进展 (改善/恶化/稳定/波动)	Optional

3 Pain Area Selection (疼痛区域选择)

Interactive body diagram for anatomical pain location mapping

Data Structure: `pain_areas` - Object with boolean values for each anatomical region

✓ <code>upper_cervical</code> - 上颈椎	✓ <code>lower_cervical</code> - 下颈椎
✓ <code>left_upper_trap</code> - 左上斜方肌	✓ <code>right_upper_trap</code> - 右上斜方肌
✓ <code>left_mid_trap</code> - 左中斜方肌	✓ <code>right_mid_trap</code> - 右中斜方肌
✓ <code>left_lower_trap</code> - 左下斜方肌	✓ <code>right_lower_trap</code> - 右下斜方肌
✓ <code>left_latissimus</code> - 左背阔肌	✓ <code>right_latissimus</code> - 右背阔肌
✓ <code>thoracic_erector</code> - 胸椎竖脊肌	✓ <code>lumbar_erector</code> - 腰椎竖脊肌
✓ <code>left_glute_max</code> - 左臀大肌	✓ <code>right_glute_max</code> - 右臀大肌
✓ <code>left_glute_med</code> - 左臀中肌	✓ <code>right_glute_med</code> - 右臀中肌
✓ <code>left_hamstring</code> - 左腘绳肌	✓ <code>right_hamstring</code> - 右腘绳肌
✓ <code>left_gastrocnemius</code> - 左腓肠肌	✓ <code>right_gastrocnemius</code> - 右腓肠肌

4 Subjective Examination (主观检查)

Patient-reported pain, function, and red flag screening

Pain & Function Assessment

Field Name	Field Key	Type	Label (中文)	Status
Pain Score	<code>pain_score</code>	Select	NPRS 疼痛评分 (0-10)	Optional
Sitting Tolerance	<code>sitting_tolerance</code>	Number	坐姿耐受时间 (分钟)	Optional
Standing Tolerance	<code>standing_tolerance</code>	Number	站立耐受时间 (分钟)	Optional
Walking Tolerance	<code>walking_tolerance</code>	Number	行走耐受时间 (分钟)	Optional
Has Assistive Tools	<code>has_assistive_tools</code>	Boolean	是否使用辅助工具	Optional
Assistive Tools	<code>assistive_tools</code>	Text	辅助工具描述	Conditional
Has Claudication	<code>has_claudication</code>	Boolean	是否有间歇性跛行	Optional
Claudication Distance	<code>claudication_distance</code>	Text	间歇性跛行距离	Conditional







Red Flags Screening

Data Structure: `red_flags` - Object with boolean values

-  weight_loss - 显著体重减轻
-  fever - 发热
-  bladder_bowel_dysfunction - 膀胱/肠道功能障碍
-  bilateral_limb_weakness - 双侧肢体无力
-  hand_clumsiness - 手部不灵活
-  appetite_loss - 食欲不振
-  night_pain - 夜间疼痛
-  saddle numbness - 鞍区麻木
-  bilateral_sensory_abnormal - 双侧感觉异常
-  gait_abnormal - 步态异常

Cervical Function Problems

Data Structure: cervical_function_problems - Object with boolean values







-  dropping_objects - 物品掉落
-  writing_difficulty - 书写困难
-  buttoning_difficulty - 扣纽扣困难
-  difficulty_picking_small_items - 难以拾取小物件
-  phone_usage_difficulty - 使用手机困难
-  chopstick_usage_difficulty - 使用筷子困难

5 Objective Examination (客观检查)

Physical examination findings including posture, ROM, special tests, and reflexes

AI Posture Analysis (MediaPipe)

Data Structure: ai_posture_analysis - Complex object with ROM measurements and clinical recommendations







-  rom_degrees - Measured ROM angles
-  rom_assessment - Functional assessment
-  compensations - Compensation patterns
-  recommendations - Clinical recommendations
-  annotatedStandingUrl - Standing posture image
-  annotatedFlexionUrl - Flexion posture image

Posture Assessment







Field Name	Field Key	Type	Options
Cervical Posture	cervical_posture	Select	前凸过度 / 正常 / 前凸消失 / 后凸
Lumbar Posture	lumbar_posture	Select	前凸过度 / 正常 / 曲度变平 / 后凸

Range of Motion (ROM)

Cervical ROM: cervical_rom - Object with 6 directional measurements



-  flexion - 屈曲
-  extension - 伸展
-  left_lateral - 左侧屈
-  right_lateral - 右侧屈
-  left_rotation - 左旋转
-  right_rotation - 右旋转

Lumbar ROM: lumbar_rom - Object with 6 directional measurements

-  flexion - 屈曲
-  extension - 伸展
-  left_lateral - 左侧屈
-  right_lateral - 右侧屈
-  left_rotation - 左旋转
-  right_rotation - 右旋转

Special Tests

SLR Test: slr_test - Object with bilateral angles

-  left_angle - 左侧角度
-  right_angle - 右侧角度

Femoral Nerve Test: femoral_nerve_test - Object with bilateral results

-  left - 左侧结果
-  right - 右侧结果

Reflex Examination

Data Structure: reflexes - Object with 5-grade scale (-, +, ++, +++, +++)

-  biceps_left - 二头肌左
-  biceps_right - 二头肌右
-  triceps_left - 三头肌左
-  triceps_right - 三头肌右
-  knee_left - 膝反射左
-  knee_right - 膝反射右
-  ankle_left - 踝反射左
-  ankle_right - 踝反射右

Vascular Assessment

Field Name	Field Key	Type	Options
Distal Pulse	distal_pulse	Select	存在 / 不存在

6 Functional Score (功能评分)

Standardized disability and function assessment tools

Scale	Field Key	Type	Range	Interpretation
RMDQ	rmdq_score	Number	0-24	0-4: 轻微 5-14: 中等 15-24: 重度
NDI	ndi_score	Number	0-100%	0-20%: 轻微 21-40%: 中等 41-60%: 重度 >60%: 完全残疾

7 Intervention & Recommendations (干预建议)

Treatment interventions and clinical recommendations






Interventions Provided

Data Structure: interventions - Object with boolean values

-  posture_correction - 姿势矫正
-  pain_management - 疼痛调节 (热敷)
-  therapeutic_exercise - 治疗性运动
-  gait_reeducation - 步态再教育

Clinical Recommendations

Data Structure: recommendations - Object with boolean values

-  discharge_with_advice - 出院并提供建议及家庭锻炼计划
-  specialist_followup - 进一步专科门诊(SOPD)随访
-  outpatient_pt - 门诊物理治疗
-  day_rehabilitation - 日间康复
-  medication_intervention - 药物干预

Additional Documentation

Field Name	Field Key	Type	Description
Medication Details	medication_details	Textarea	Drug name, dosage, frequency, timing, duration
Remarks	remarks	Textarea	General clinical notes and observations

Technical Implementation

Data Validation & Sanitization

- Numeric Fields:** age, pain_score, sitting_tolerance, standing_tolerance, walking_tolerance, rmdq_score, ndi_score - Validated as integers with range checking
- Boolean Fields:** has_radiation, has_assistive_tools, has_claudication - Converted to strict boolean values
- Nested Boolean Objects:** red_flags, cervical_function_problems, interventions, recommendations - Each key converted to boolean
- Required Field Validation:** study_id, age, gender must be present for form submission

Auto-Save & Synchronization

- Real-time Auto-save:** Form data automatically saved to backend after each section completion

- Sync Interval:** 3-second polling for remote updates via `last_sync_timestamp`
- Conflict Resolution:** Remote changes override local data when timestamps indicate newer version
- Workspace Association:** All patient data linked to `workspace_id` for multi-tenant support

AI Features

- OCR Extraction:** Upload medical record images → AI extracts structured data → Auto-populate form fields
- MediaPipe Pose Analysis:** Real-time body posture detection → Automatic ROM calculation → Generate clinical recommendations
- Data Sanitization:** AI-extracted data validated and sanitized before form population
- Section Completion Tracking:** Smart detection of completed sections based on non-empty validated fields

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