

Sports Management App - Database Schema Diagram

erDiagram

```
USERS {  
    uuid id PK  
    varchar email UK  
    varchar password_hash  
    enum role "admin, referee"  
    text_array roles  
    varchar name  
    varchar phone  
    varchar location  
    varchar postal_code  
    integer max_distance  
    boolean is_available  
    decimal wage_per_game  
    uuid referee_level_id FK  
    integer years_experience  
    integer games_refereed_season  
    decimal evaluation_score  
    text notes  
    timestamp created_at  
    timestamp updated_at  
}
```

```
REFEREE_LEVELS {  
    uuid id PK  
    varchar name UK "Learning, Growing, Teaching"  
    decimal wage_amount  
    text description  
    json allowed_divisions  
    json experience_requirements  
    json capability_requirements  
    timestamp created_at  
    timestamp updated_at  
}
```

```
POSITIONS {  
    uuid id PK  
    varchar name UK "Referee 1, Referee 2, Referee 3"  
    text description  
    timestamp created_at  
    timestamp updated_at  
}
```

```
LEAGUES {  
    uuid id PK  
    varchar organization "Okotoks, Calgary"
```

```

varchar age_group "U11, U13, U15"
varchar gender "Boys, Girls, Mixed"
varchar division "Division 1, Division 2, Premier"
varchar season "Winter 2025, Spring 2025"
varchar level "Recreational, Competitive, Elite"
timestamp created_at
timestamp updated_at
}

TEAMS {
  uuid id PK
  varchar name
  uuid league_id FK
  integer rank
  varchar location
  varchar contact_email
  varchar contact_phone
  timestamp created_at
  timestamp updated_at
}

GAMES {
  uuid id PK
  uuid home_team_id FK
  uuid away_team_id FK
  uuid league_id FK
  date game_date
  time game_time
  varchar location
  varchar postal_code
  enum level "Recreational, Competitive, Elite"
  enum game_type "Community, Club, Tournament, Private Tournament"
  decimal pay_rate
  integer refs_needed
  decimal wage_multiplier
  text wage_multiplier_reason
  enum status "assigned, unassigned, up-for-grabs, completed, cancelled"
  timestamp created_at
  timestamp updated_at
}

GAME_ASSIGNMENTS {
  uuid id PK
  uuid game_id FK
  uuid user_id FK
  uuid position_id FK
  timestamp assigned_at
  uuid assigned_by FK
  enum status "assigned, accepted, declined, completed"
  decimal calculated_wage
  timestamp created_at
  timestamp updated_at
}

```

```
}
```

```
REFEREE_AVAILABILITY {  
  uuid id PK  
  uuid referee_id FK  
  date date  
  time start_time  
  time end_time  
  boolean is_available  
  varchar reason  
  varchar pattern_type "single, weekly, daily"  
  integer max_games_per_period  
  varchar preferred_locations  
  varchar preferred_partners  
  text notes  
  integer priority_level  
  boolean is_flexible  
  timestamp created_at  
  timestamp updated_at  
}
```

```
AVAILABILITY_PATTERNS {  
  uuid id PK  
  uuid referee_id FK  
  varchar name  
  json days_of_week  
  time start_time  
  time end_time  
  date effective_from  
  date effective_until  
  boolean is_active  
  integer max_games_per_week  
  integer max_distance_km  
  text notes  
  timestamp created_at  
  timestamp updated_at  
}
```

```
INVITATIONS {  
  uuid id PK  
  varchar email UK  
  varchar first_name  
  varchar last_name  
  varchar role  
  uuid invited_by FK  
  varchar token UK  
  timestamp expires_at  
  boolean used  
  timestamp used_at  
  timestamp created_at  
  timestamp updated_at  
}
```

%% Relationships

USERS II--o{ GAME_ASSIGNMENTS : "assigned_to"

USERS II--o{ REFEREE_AVAILABILITY : "has_availability"

USERS II--o{ AVAILABILITY_PATTERNS : "has_patterns"

USERS }o--II REFEREE_LEVELS : "has_level"

USERS II--o{ INVITATIONS : "invited_by"

LEAGUES II--o{ TEAMS : "contains"

LEAGUES II--o{ GAMES : "organizes"

TEAMS II--o{ GAMES : "plays_home"

TEAMS II--o{ GAMES : "plays_away"

GAMES II--o{ GAME_ASSIGNMENTS : "assigned_referees"

POSITIONS II--o{ GAME_ASSIGNMENTS : "position_type"

GAME_ASSIGNMENTS }o--II USERS : "assigned_by"

Key Database Features

Core Relationships

- **Users:** Central entity handling both admins and referees
- **Games:** Connected to teams, leagues, and referee assignments
- **Teams:** Organized within leagues with proper normalization

Data Integrity

- UUID primary keys throughout for better distribution
- Unique constraints on critical combinations
- Foreign key constraints with proper cascade rules
- **Critical Constraint:** teams.league_id is NOT NULL (Migration 021)
- Enum types for controlled vocabulary

Performance Optimizations

- Indexes on frequently queried fields (game_date, location, etc.)
- Normalized structure reducing data duplication
- Efficient many-to-many relationships through junction tables

Recent Schema Evolution

1. Team/League Restructuring (Migrations 020, 021):

- Migrated from JSON team data in games table to proper normalized entities
- Added LEAGUES table with organization, age_group, gender, division, season
- Updated TEAMS table with mandatory league_id foreign key (NOT NULL)
- Removed JSON home_team/away_team fields from games
- Added proper foreign key constraints for data integrity
- **API Layer Updated:** Assignment queries now properly join with teams table

2. **User Consolidation** (Migration 015): Merged referees into users table
3. **Enhanced Roles** (Migration 022): Added array-based role system
4. **Availability Patterns** (Migration 023): Support for recurring availability rules
5. **Game Types** (Latest Migration): Added Community, Club, Tournament classifications
6. **Email Integration**: Added invitation system with email notifications
7. **API Consistency**: Updated all assignment endpoints to use proper team relationships

Advanced Features

- **Flexible Availability**: Both single dates and recurring patterns
- **Wage Calculation**: Automatic wage calculation with multipliers
- **Assignment Tracking**: Full lifecycle of referee assignments
- **Invitation System**: Secure user onboarding workflow

This schema supports comprehensive sports league management with proper data integrity, performance optimization, and flexibility for complex referee assignment workflows.