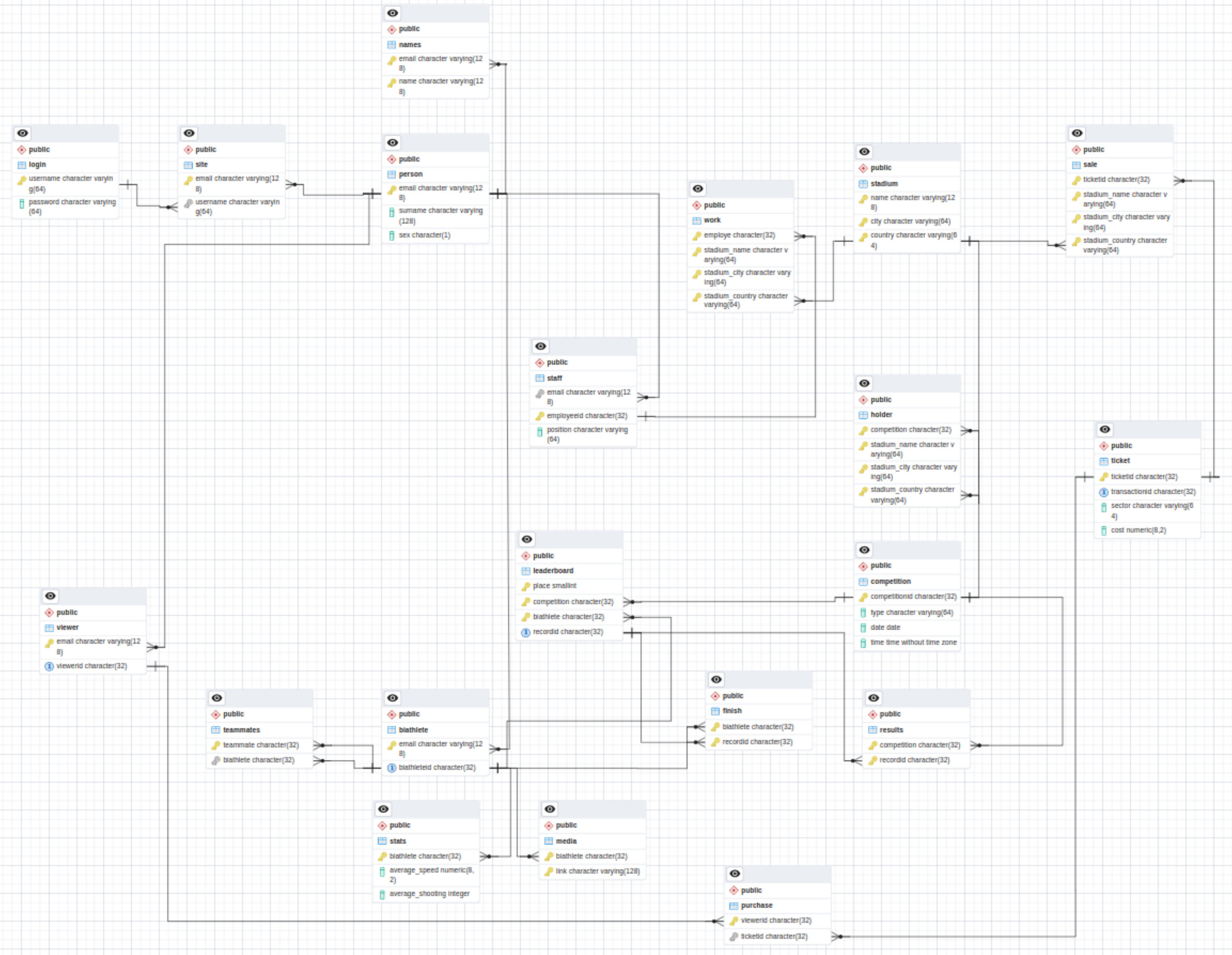
Data Querying

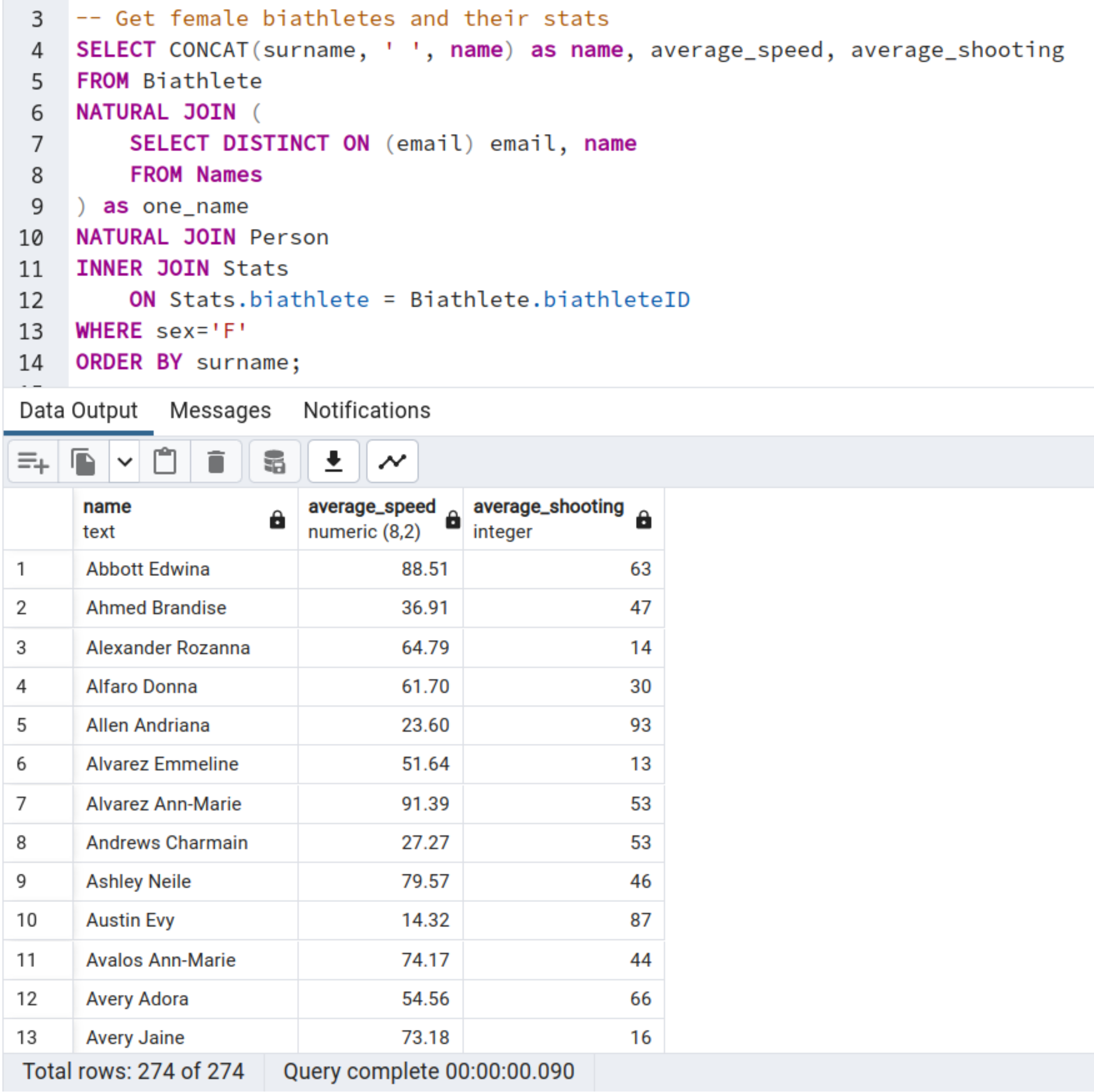

public
names
email character varying(128)
name character varying(128)
public
login
username character varying(64)
password character varying(64)
public
site
email character varying(128)
username character varying(64)
public
person
email character varying(128)
surname character varying(128)
sex character(1)
public
work
employe character(32)
stadium_name character varying(64)
stadium_city character varying(64)
stadium_country character varying(64)
public
stadium
name character varying(128)
city character varying(64)
country character varying(64)
public
sale
ticketid character(32)
stadium_name character varying(64)
stadium_city character varying(64)
stadium_country character varying(64)
public
staff
email character varying(128)
employeeid character(32)
position character varying(64)
public
holder
competition character(32)
stadium_name character varying(64)
stadium_city character varying(64)
stadium_country character varying(64)
public
ticket
ticketid character(32)
transactionid character(32)
sector character varying(64)
cost numeric(8,2)
public
leaderboard
place smallint
competition character(32)
biathlete character(32)
recordid character(32)
public
competition
competitionid character(32)
type character varying(64)
date date
time time without time zone
public
viewer
email character varying(128)
viewerid character(32)
public
teammates
teammate character(32)
biathlete character(32)
public
biathlete
email character varying(128)
biathleteid character(32)
public
finish
biathlete character(32)
recordid character(32)
public
results
competition character(32)
recordid character(32)
public
stats
biathlete character(32)
average_speed numeric(8,2)
average_shooting integer
public
media
biathlete character(32)
link character varying(128)
public
purchase
viewerid character(32)
ticketid character(32)

(Sorry for the code without syntax highlighting in blocks of code. Notion does not export worksheets as PDFs with code highlighting. You can check the original page where the code is properly highlighted)

SQL queries for database definition

```
CREATE TABLE IF NOT EXISTS Person(
  email VARCHAR(128) PRIMARY KEY,
  surname VARCHAR(128) NOT NULL,
  sex CHAR(1) DEFAULT NULL,

  CONSTRAINT check_email
    CHECK (email like '_%@_%.__%'),
  CONSTRAINT check_sex
    CHECK (sex='M' or sex='F')
);

CREATE TABLE IF NOT EXISTS Names(
  email VARCHAR(128) NOT NULL CONSTRAINT email_fk_person REFERENCES Person (email) ON UPDATE CASCADE ON DELETE CASCADE,
  id UNIQUE
  name VARCHAR(128) NOT NULL,
  PRIMARY KEY (email,name)
);

CREATE TABLE IF NOT EXISTS Login(
  username VARCHAR(64) PRIMARY KEY,
  password VARCHAR(64) NOT NULL
);

CREATE TABLE IF NOT EXISTS Site(
  email VARCHAR(128) PRIMARY KEY,
  username VARCHAR(64) UNIQUE DEFAULT NULL,

  CONSTRAINT email_fk_person
    FOREIGN KEY (email)
    REFERENCES Person (email)
    ON UPDATE CASCADE
    ON DELETE CASCADE,
  CONSTRAINT username_fk_login
    FOREIGN KEY (username)
    REFERENCES Login (username)
    ON UPDATE CASCADE
    ON DELETE CASCADE
);

CREATE TABLE IF NOT EXISTS Viewer(
  email VARCHAR(128) PRIMARY KEY,
  viewerID CHAR(32) UNIQUE NOT NULL,
  CONSTRAINT email_fk_person
    FOREIGN KEY (email)
    REFERENCES Person (email)
    ON UPDATE CASCADE
    ON DELETE CASCADE
);
CREATE TABLE IF NOT EXISTS Ticket(
  ticketID CHAR(32) PRIMARY KEY,
  transactionID CHAR(32) UNIQUE DEFAULT NULL,
  sector VARCHAR(64) NOT NULL,
  cost DECIMAL(8,2) NOT NULL
);

CREATE TABLE IF NOT EXISTS Purchase(
  viewerID CHAR(32) PRIMARY KEY,
  ticketID CHAR(32) UNIQUE NOT NULL,
  CONSTRAINT viewerID_fk_Viewer
    FOREIGN KEY (viewerID)
    REFERENCES Viewer (viewerID)
    ON UPDATE CASCADE
    ON DELETE CASCADE,
  CONSTRAINT ticketID_fk_Ticket
    FOREIGN KEY (ticketID)
    REFERENCES Ticket (ticketID)
    ON UPDATE CASCADE
    ON DELETE CASCADE
);

CREATE TABLE IF NOT EXISTS Staff(
  email VARCHAR(128) NOT NULL CONSTRAINT email_fk_person REFERENCES Person (email) ON UPDATE CASCADE ON DELETE CASCADE,
  employeeID CHAR(32) PRIMARY KEY,
  position VARCHAR(64) NOT NULL
);
CREATE TABLE IF NOT EXISTS Stadium(
  name VARCHAR(128) NOT NULL,
  city VARCHAR(64) NOT NULL,
  country VARCHAR(64) NOT NULL,
  PRIMARY KEY (name,city,country)
);
CREATE TABLE IF NOT EXISTS Work(
  employe CHAR(32) NOT NULL CONSTRAINT employe_fk_Staff REFERENCES Staff (employeeID),
  stadium_name VARCHAR(64) NOT NULL,
  stadium_city VARCHAR(64) NOT NULL,
  stadium_country VARCHAR(64) NOT NULL,
  PRIMARY KEY (employe, stadium_name,stadium_city,stadium_country),

  CONSTRAINT stadium_info_fk_Stadium
    FOREIGN KEY (stadium_name, stadium_city, stadium_country)
    REFERENCES Stadium (name,city,country)
    ON UPDATE CASCADE
    ON DELETE CASCADE
);

CREATE TABLE IF NOT EXISTS Sale(
  ticketID CHAR(32) NOT NULL CONSTRAINT ticketID_fk_Ticket REFERENCES Ticket (ticketID) ON UPDATE CASCADE ON DELETE CASCADE,
  stadium_name VARCHAR(64) NOT NULL,
  stadium_city VARCHAR(64) NOT NULL,
  stadium_country VARCHAR(64) NOT NULL,
  PRIMARY KEY (ticketID, stadium_name,stadium_city,stadium_country),

  CONSTRAINT stadium_info_fk_Stadium
    FOREIGN KEY (stadium_name, stadium_city, stadium_country)
    REFERENCES Stadium (name,city,country)
    ON UPDATE CASCADE
    ON DELETE CASCADE
);

CREATE TABLE IF NOT EXISTS Biathlete(
  email VARCHAR(128) PRIMARY KEY CONSTRAINT email_fk_person REFERENCES Person (email) ON UPDATE CASCADE ON DELETE NO ACTION,
  biathleteID CHAR(32) UNIQUE NOT NULL
);

CREATE TABLE IF NOT EXISTS Media(
  biathlete CHAR(32) NOT NULL CONSTRAINT biathlete_fk_Biathlete REFERENCES Biathlete (biathleteID) ON UPDATE CASCADE ON DELETE CASCADE,
  link VARCHAR(128) NOT NULL,
  PRIMARY KEY(biathlete,link)
);

CREATE TABLE IF NOT EXISTS Stats(
  biathlete CHAR(32) PRIMARY KEY,
  average_speed DECIMAL(8,2) NOT NULL,
  average_shooting INTEGER NOT NULL,

  CONSTRAINT CHK_speed
    CHECK (average_speed>=0),
  CONSTRAINT CHK_shooting
    CHECK (average_shooting>=0 AND average_shooting<=100),

  CONSTRAINT biathlete_fk_Biathlete
    FOREIGN KEY (biathlete)
    REFERENCES Biathlete (biathleteID)
    ON UPDATE CASCADE
    ON DELETE CASCADE
);

CREATE TABLE IF NOT EXISTS Teammates(
  teammate CHAR(32) PRIMARY KEY,
  biathlete CHAR(32) NOT NULL CONSTRAINT biathlete_fk_Biathlete REFERENCES Biathlete (biathleteID),

  CONSTRAINT teammate_fk_Biathlete
    FOREIGN KEY (teammate)
    REFERENCES Biathlete (biathleteID)
    ON UPDATE CASCADE
    ON DELETE CASCADE
);

CREATE TABLE IF NOT EXISTS Competition(
  competitionID CHAR(32) PRIMARY KEY,
  type VARCHAR(64) NOT NULL,
  date DATE NOT NULL,
  time TIME NOT NULL
);

CREATE TABLE IF NOT EXISTS Holder(
  competition CHAR(32) CONSTRAINT competition_fk_Competition REFERENCES Competition (competitionID),
  stadium_name VARCHAR(64) NOT NULL,
  stadium_city VARCHAR(64) NOT NULL,
  stadium_country VARCHAR(64) NOT NULL,
  PRIMARY KEY (competition, stadium_name,stadium_city,stadium_country),

  CONSTRAINT stadium_info_fk_Stadium
    FOREIGN KEY (stadium_name, stadium_city, stadium_country)
    REFERENCES Stadium (name,city,country)
    ON UPDATE CASCADE
    ON DELETE CASCADE
);

CREATE TABLE IF NOT EXISTS Leaderboard(
  place SMALLINT NOT NULL,
  competition CHAR(32) NOT NULL CONSTRAINT competition_fk_Competition REFERENCES Competition (competitionID) ON UPDATE CASCADE ON DELETE NO
  biathlete CHAR(32) NOT NULL CONSTRAINT biathlete_fk_Biathlete REFERENCES Biathlete (biathleteID) ON UPDATE CASCADE ON DELETE NO ACTION,
  recordID CHAR(32) NOT NULL UNIQUE,
  PRIMARY KEY(place,competition,biathlete),

  CONSTRAINT CHK_place
    CHECK (place>=1)

);

CREATE TABLE IF NOT EXISTS Results(
  competition CHAR(32) NOT NULL CONSTRAINT competition_fk_Competition REFERENCES Competition (competitionID) ON UPDATE CASCADE ON DELETE NO
  recordID CHAR(32) NOT NULL CONSTRAINT recordID_fk_Leaderboard REFERENCES Leaderboard (recordID) ON UPDATE CASCADE ON DELETE NO ACTION,
  PRIMARY KEY(competition, recordID)
);

CREATE TABLE IF NOT EXISTS Finish(
  biathlete CHAR(32) NOT NULL CONSTRAINT biathlete_fk_Biathlete REFERENCES Biathlete (biathleteID) ON UPDATE CASCADE ON DELETE NO ACTION,
  recordID CHAR(32) NOT NULL CONSTRAINT recordID_fk_Leaderboard REFERENCES Leaderboard (recordID) ON UPDATE CASCADE ON DELETE NO ACTION,
  PRIMARY KEY(biathlete, recordID)
);
```

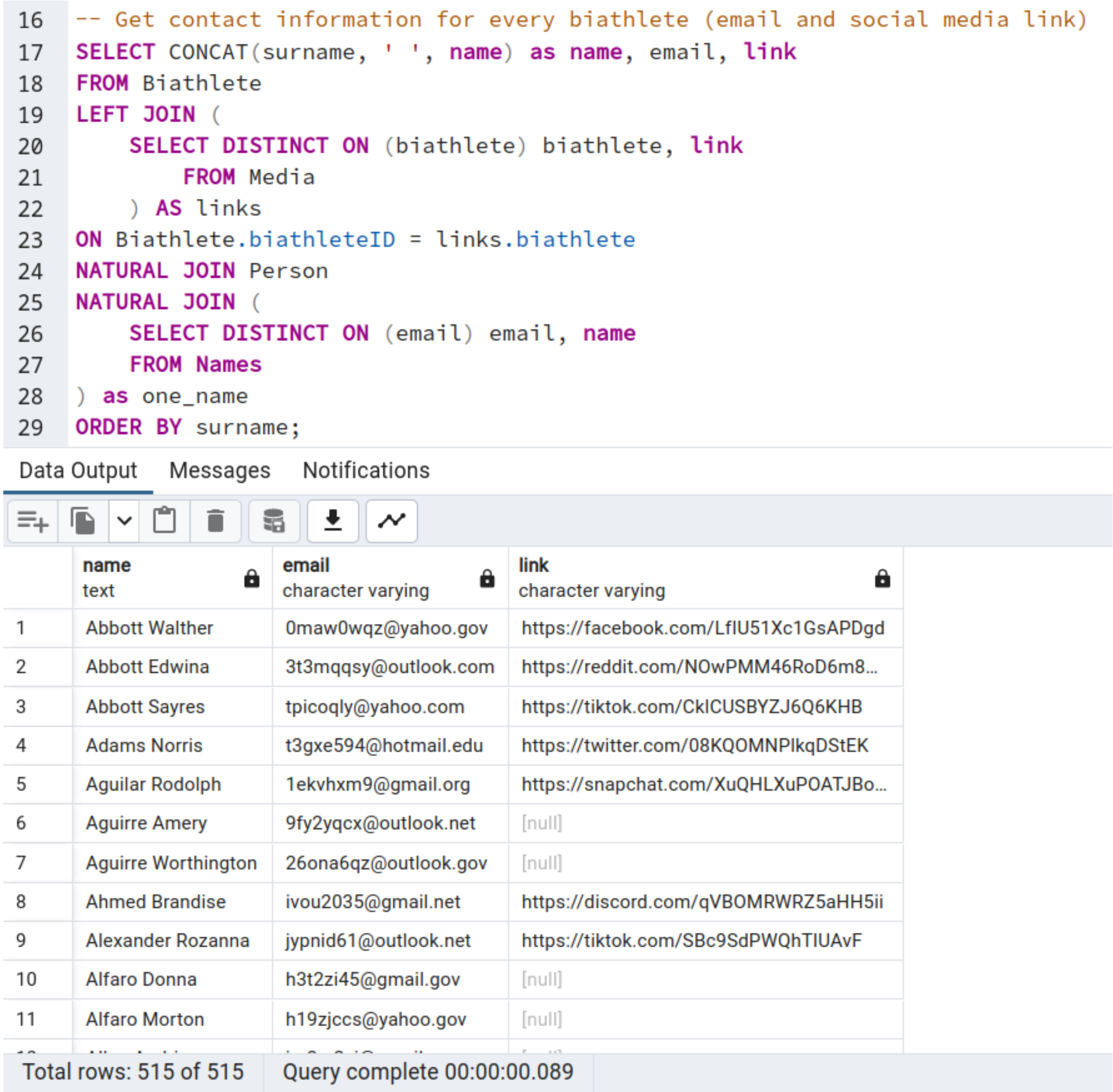
SQL queries to retrieve data from the database



```sql
-- Get female biathletes and their stats
SELECT CONCAT(surname, ' ', name) as name, average_speed, average_shooting
FROM Biathlete
NATURAL JOIN (
    SELECT DISTINCT ON (email) email, name
    FROM Names
) as one_name
NATURAL JOIN Person
INNER JOIN Stats
    ON Stats.biathlete = Biathlete.biathleteID
WHERE sex='F'
ORDER BY surname;
```

	name text	average_speed numeric (8,2)	average_shooting integer
1	Abbott Edwina	88.51	63
2	Ahmed Brandise	36.91	47
3	Alexander Rozanna	64.79	14
4	Alfaro Donna	61.70	30
5	Allen Andriana	23.60	93
6	Alvarez Emmeline	51.64	13
7	Alvarez Ann-Marie	91.39	53
8	Andrews Charmain	27.27	53
9	Ashley Neile	79.57	46
10	Austin Evy	14.32	87
11	Avalos Ann-Marie	74.17	44
12	Avery Adora	54.56	66
13	Avery Jaine	73.18	16

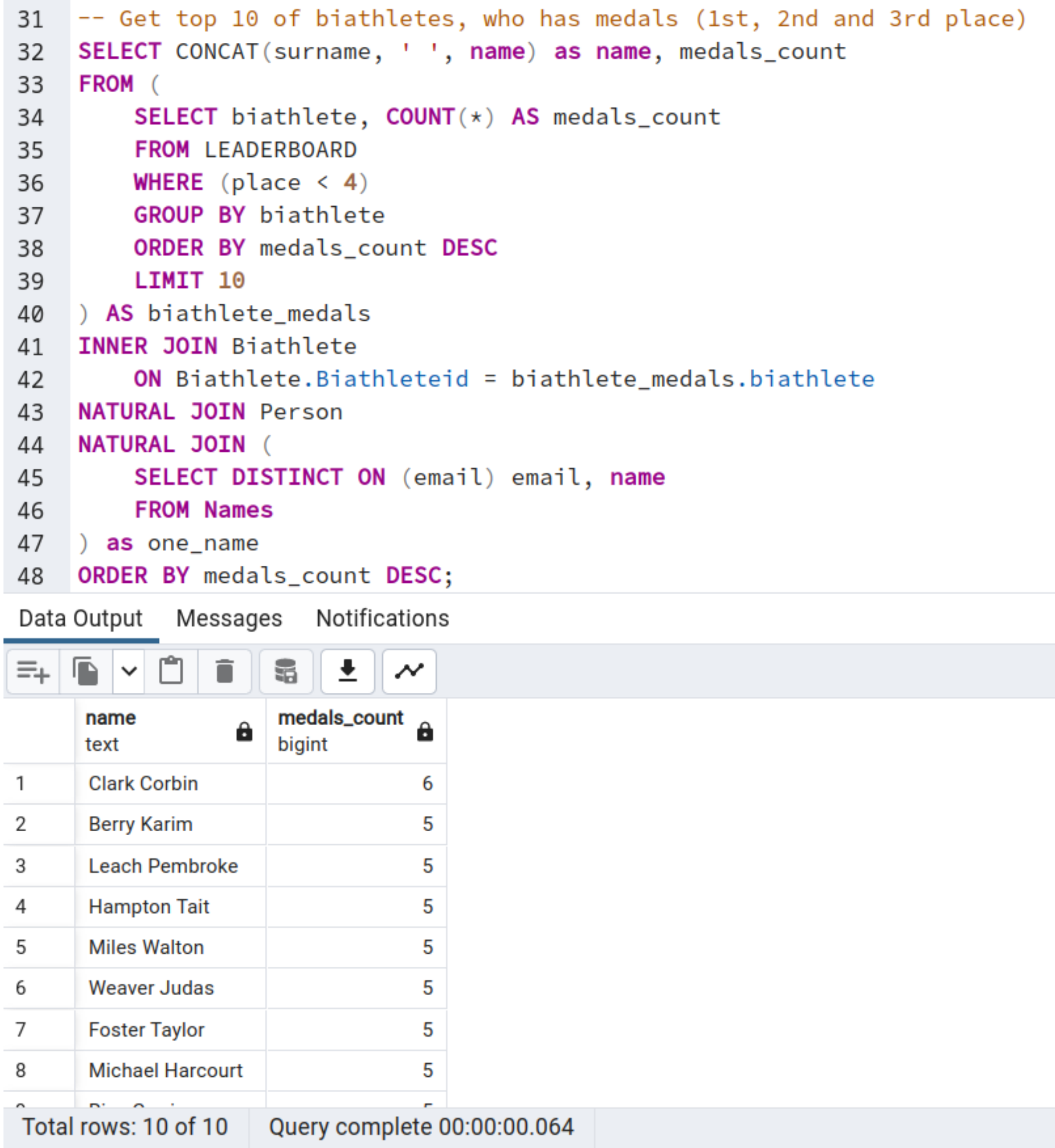
Total rows: 274 of 274 Query complete 00:00:00.090



```sql
-- Get contact information for every biathlete (email and social media link)
SELECT CONCAT(surname, ' ', name) as name, email, link
FROM Biathlete
LEFT JOIN (
    SELECT DISTINCT ON (biathlete) biathlete, link
        FROM Media
    ) AS links
ON Biathlete.biathleteID = links.biathlete
NATURAL JOIN Person
NATURAL JOIN (
    SELECT DISTINCT ON (email) email, name
    FROM Names
) as one_name
ORDER BY surname;
```

	name text	email character varying	link character varying
1	Abbott Walther	0maw0wqz@yahoo.gov	https://facebook.com/LfIU51Xc1GsAPDgd
2	Abbott Edwina	3t3mqqsy@outlook.com	https://reddit.com/NOwPMM46RoD6m8...
3	Abbott Sayres	tpicoqly@yahoo.com	https://tiktok.com/CkICUSBYZJ6Q6KHB
4	Adams Norris	t3gxe594@hotmail.edu	https://twitter.com/08KQOMNPlkqDStEK
5	Aguilar Rodolph	1ekvhxm9@gmail.org	https://snapchat.com/XuQHLXuPOATJBo...
6	Aguirre Amery	9fy2yqcx@outlook.net	[null]
7	Aguirre Worthington	26ona6qz@outlook.gov	[null]
8	Ahmed Brandise	ivou2035@gmail.net	https://discord.com/qVBOMRWRZ5aHH5ii
9	Alexander Rozanna	jypnid61@outlook.net	https://tiktok.com/SBc9SdPWQhTIUAvF
10	Alfaro Donna	h3t2zi45@gmail.gov	[null]
11	Alfaro Morton	h19zjccs@yahoo.gov	[null]

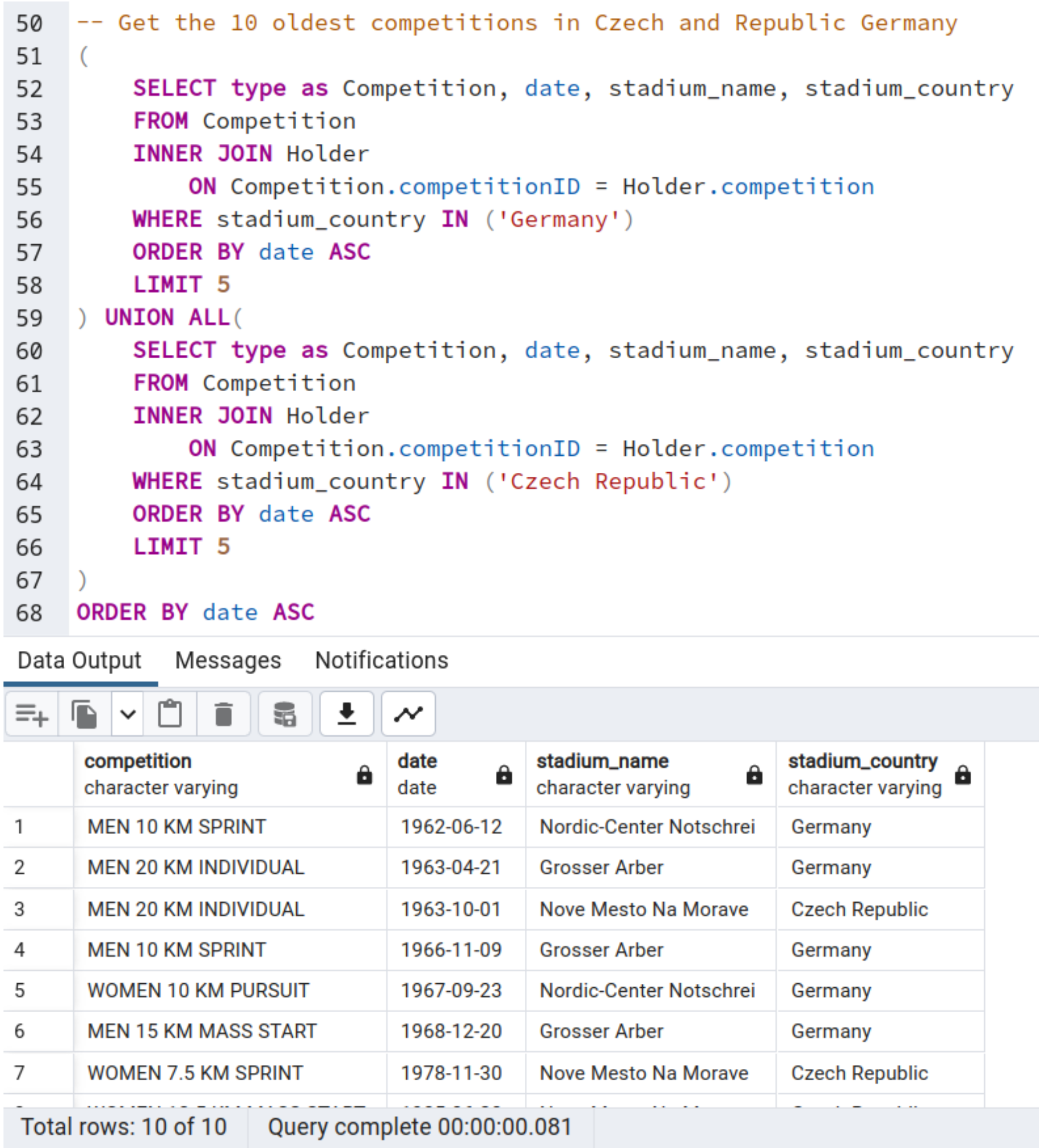
Total rows: 515 of 515 Query complete 00:00:00.089



```sql
-- Get top 10 of biathletes, who has medals (1st, 2nd and 3rd place)
SELECT CONCAT(surname, ' ', name) as name, medals_count
FROM (
    SELECT biathlete, COUNT(*) AS medals_count
    FROM LEADERBOARD
    WHERE (place < 4)
    GROUP BY biathlete
    ORDER BY medals_count DESC
    LIMIT 10
) AS biathlete_medals
INNER JOIN Biathlete
    ON Biathlete.Biathleteid = biathlete_medals.biathlete
NATURAL JOIN Person
NATURAL JOIN (
    SELECT DISTINCT ON (email) email, name
    FROM Names
) as one_name
ORDER BY medals_count DESC;
```

	name text	medals_count bigint
1	Clark Corbin	6
2	Berry Karim	5
3	Leach Pembroke	5
4	Hampton Tait	5
5	Miles Walton	5
6	Weaver Judas	5
7	Foster Taylor	5
8	Michael Harcourt	5
9	[illegible]	5

Total rows: 10 of 10 Query complete 00:00:00.064



```sql
-- Get the 10 oldest competitions in Czech and Republic Germany
(
    SELECT type as Competition, date, stadium_name, stadium_country
    FROM Competition
    INNER JOIN Holder
        ON Competition.competitionID = Holder.competition
    WHERE stadium_country IN ('Germany')
    ORDER BY date ASC
    LIMIT 5
) UNION ALL(
    SELECT type as Competition, date, stadium_name, stadium_country
    FROM Competition
    INNER JOIN Holder
        ON Competition.competitionID = Holder.competition
    WHERE stadium_country IN ('Czech Republic')
    ORDER BY date ASC
    LIMIT 5
)
ORDER BY date ASC
```

	competition character varying	date date	stadium_name character varying	stadium_country character varying
1	MEN 10 KM SPRINT	1962-06-12	Nordic-Center Notschrei	Germany
2	MEN 20 KM INDIVIDUAL	1963-04-21	Grosser Arber	Germany
3	MEN 20 KM INDIVIDUAL	1963-10-01	Nove Mesto Na Morave	Czech Republic
4	MEN 10 KM SPRINT	1966-11-09	Grosser Arber	Germany
5	WOMEN 10 KM PURSUIT	1967-09-23	Nordic-Center Notschrei	Germany
6	MEN 15 KM MASS START	1968-12-20	Grosser Arber	Germany
7	WOMEN 7.5 KM SPRINT	1978-11-30	Nove Mesto Na Morave	Czech Republic

Total rows: 10 of 10   Query complete 00:00:00.081